

PREPARING FOR BATTLE: LEARNING LESSONS IN THE  
US ARMY DURING WORLD WAR I

A thesis presented to the Faculty of the U.S. Army  
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fulfillment of the requirements for the  
degree

MASTER OF MILITARY ART AND SCIENCE  
Military History

by

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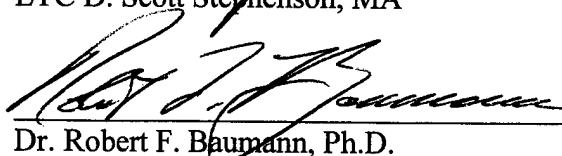
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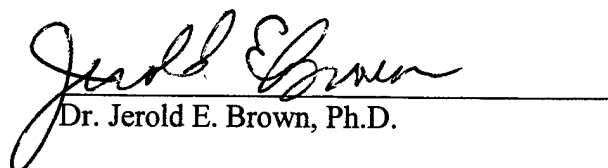
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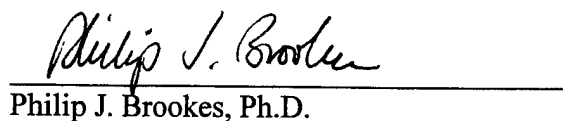
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The opinion and conclusions expressed herein are those of the student author and do not necessarily represent the views of the U.S. Army Command and General Staff College or other governmental agency. (References to this study should include the foregoing statement.)

## ABSTRACT

PREPARING FOR BATTLE: LEARNING LESSONS IN THE US ARMY DURING WORLD WAR I by Lieutenant Commander Glen T. Cullen, USN, 113 pages

This thesis examines how well the United States Army of World War I prepared for battle by learning the lessons of modern combat from other nations engaged in war. Armies prepare for war during peace. However, the true validation of doctrine weapons, organization, and training developed in peacetime is war. Hostilities between the Allied and Central Powers raged for three years before the United States declared war. This period provided the US Army a unique opportunity to observe how technologies and techniques were effectively employed by French, British, and German commanders.

The question this thesis attempts to answer is: How well did the United States Army apply the experiences of the belligerent nations from 1914 to 1917 in preparing the American Expeditionary Force (AEF) for combat in the European Theater? The thesis starts with a discussion of pre-war Army developments from the Russo-Japanese War of 1904-05 through the last US military action before the declaration of war, the Punitive Expedition to Mexico. The evolution of warfare through French, British, and German experience is described followed by a discussion of the observations of modern warfare by military professionals and how US Army doctrinal publications and operations planning reflected these changes. The thesis then analyses US battlefield performance and influences upon the formation of US doctrine.

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## CHAPTER 1

### INTRODUCTION

The art and science of warfare has always been and will continue to be in a constant state of flux. Throughout history commanders have attempted to grasp the significance of new weapons and technology and modify tactics to accommodate these advances. For most commanders, the effectiveness of new tactics can be analyzed in war games or field exercises. Yet, combat is the only true test. World War I was a proving ground for new weapons, technology, and tactics and for two and a half years, while war inflamed the European continent, the United States Army watched. The Army watched the employment of the airplane, machine gun, tanks, gas, wireless telegraphy, and new tactics. War was declared on 6 April 1917, and the ill-prepared United States Army found itself faced with the challenge of forging an army and transporting it over 3,000 miles of ocean to confront a modern and experienced army.

There was no single event that triggered United States involvement in the conflict but a long series of events leading up to President Wilson's decision to ask Congress for a declaration of war against Germany. On 28 June 1914, an assassin's bullet cut short the life of Archduke Franz Ferdinand, the heir apparent to the throne of the Austria-Hungary Empire. The news of this event had little impact on the American people who could not understand how this tragic event in the small Balkan province of Bosnia could affect their lives.<sup>1</sup> The isolationist history of the United States further assured Americans that this event in the Balkans was insignificant. At a 27 July 1914 press conference President Wilson reiterated "that the United States has never attempted to interfere in European

affairs.”<sup>2</sup> Within two months of the assassination, the armies of Europe would clash in a bloody war that would last over four years.

As troops massed and war on the continent appeared inevitable, maintaining United States neutrality would become a greater challenge. Many Americans had ethnic ties to the nations at war and sympathy for any nation seemed only natural. Once hostilities started, the warring nations made it equally difficult to justify which side symbolized the more noble cause. Britain proclaimed the “Declaration of London” which established a blockade of Germany that Germany countered with a blockade of the British Isle. Both acts were clearly illegal under international law. Nevertheless, on 18 August 1914, the President passionately appealed to the American people “to act and speak in the true spirit of neutrality.”<sup>3</sup> In eight months, neutrality would be more difficult as the war touched closer to home when American blood was spilled off European shores.

Unlike the British blockade, the German blockade proved to have direct consequences for the United States. In February 1915 the German government declared a submarine warfare zone around Britain and stated German submarines would sink belligerent merchant vessels sighted in this zone. Three months later on 7 May 1915, a German submarine torpedoed the British Cunard passenger liner *Lusitania* off the Irish coast with a loss of over eleven hundred civilians including one hundred twenty-eight Americans. The United States was outraged at this aggressive act and many demanded an immediate declaration of war against Germany. Instead President Wilson opted for diplomatic protests and demanded assurance from the German government that an act of

this sort would not be repeated. Diplomatic efforts succeeded and the German government promised not to torpedo unresisting passenger liners.<sup>4</sup>

Despite their promise, the German commitment to submarine warfare was manifest once again thirteen months later. On 24 March 1916, a German submarine torpedoed without warning the unarmed French passenger ship *Sussex* in the English Channel. Though no Americans perished, several were seriously injured. In response, President Wilson issued an ultimatum to the German government stating that diplomatic relations would be cut unless Germany ceased its campaign against passenger ships and merchant vessels.<sup>5</sup>

In spite of the ultimatum issued as a result of the *Sussex* sinking and on the heels of President Wilson's "peace without victory" speech, Berlin expanded its unrestricted submarine warfare campaign to include belligerent and neutral shipping entering the European war zone. This declaration now meant that United States merchant ships were in jeopardy of being sunk without warning by German submarines. As promised, President Wilson severed ties with Germany, but neither the President nor the American people believed the German government would actually follow through with their new threat. Because the threat to Americans was perceived as minimal, public opinion did not consider the new threat sufficient cause to go to war.<sup>6</sup> Public opinion drastically changed course shortly thereafter when newspapers across the country published the contents of a cable from the German Foreign Minister.

On 1 March 1917, it was revealed that the German Foreign Minister, Dr. Alfred Zimmermann cabled the German minister in Mexico to negotiate an alliance in the event

of war between the United States and Germany. The carrot for the Mexicans joining an alliance with Germany was regaining Texas, New Mexico, and Arizona. This cable was a unifying event for the outraged American people. In response the President authorized the arming of United States flagged merchant vessels and authorized the merchants to shoot German submarines in the declared war zone. He also instructed Secretary of the Navy Josephus Daniels to contact the British Admiralty and establish ports and navigation routes that would afford the maximum safety to United States merchant vessels.<sup>7</sup> By mid-March four American merchant vessels were sunk with the loss of 36 lives. The sinkings were active hostility conducted by Germany against the United States and the American people now demanded war.<sup>8</sup>

President Wilson decided that war with Germany was the correct response. On 2 April 1917, a solemn President went before Congress and asked that Congress recognize the existence of a state of war between the United States and Germany. In justifying his request, he denied that the United States was willing to go to war but that the United States had no choice because hostilities were “thrust” upon the United States. He restated this view two months later on 14 June 1917, saying, “The military masters of Germany denied us the right to be neutral.”<sup>9</sup> On 6 April 1917, by an overwhelming majority, Congress formally declared war.

Not until the Armistice was effective at the eleventh hour, on the eleventh day, in the eleventh month could the toll of the war be calculated. The cost of the war in human lives was staggering. Total battle deaths were 7,485,600 soldiers, sailors, airmen, and marines. Russia endured the most casualties: 1.7 million Russians that lost their lives.

German battle deaths numbered 1.6 million, France 1.4 million, and Great Britain 900,000. American forces were in combat for 200 days from 25 April 1918 when troops entered an active sector on the Picardy Front until 11 November 1918. In that period of time, 115,660 American servicemen made the ultimate sacrifice for their country. However, more soldiers died from disease and accidents (65,380) than in battle (50,280).<sup>10</sup> In comparison, 58,000 troops were killed or listed as missing in action during the entire Vietnam War.<sup>11</sup>

Equally astounding was the amount of money spent on the war. In 1920's dollars, total expenditures for World War I were over \$186,000,000,000. The war cost the vanquished Imperial German Government \$39 billion. Great Britain spent \$38 billion while France spent \$26 billion. The war cost the United States \$22 billion including \$8.9 billion in loans to the Allies. The \$186 billion equates to spending \$1,000,000 per hour during the war.<sup>12</sup>

Once war was declared the United States Army was transformed from a constabulary force of 100,000 soldiers to a force of over 4 million.<sup>13</sup> There is strong evidence that this force was very successful in battle. In thirteen major operations, the American Expeditionary Force (AEF) held 101 miles of front (23 percent of the entire Allied battle line), and advanced 485 miles against heavy German resistance. The AEF captured 63,000 prisoners, 1,378 pieces of artillery, 708 trench mortars, and 9,650 machine guns during the course of the war. The fledgling Army Air Corps aviators demonstrated great skill in the air shooting down 755 enemy planes while losing 357 planes.<sup>14</sup>

Though these statistics appear impressive, numbers alone do not provide an indication of how well the US Army fought in Europe. After observing the evolution of warfare through allies and enemies, could the US Army have employed men and equipment in a better manner? This thesis will investigate how the US Army accomplished the daunting task of transforming the small prewar army into a substantially larger combat-ready force. First it will examine the prewar Army and identify how it was organized and trained. How other conflicts and operations influenced the Army and how the Army attempted to shape itself will also be investigated. Next, this thesis will describe how the nature of conflict changed during the period before the United States entered the war in order to identify the evolution of modern combat. The following chapter will illustrate what information was available to the Army on the progress of the war and if the Army synthesized this data into new doctrine. It will explore what lessons could have been learned and how the Army responded to change. Lastly, the thesis will investigate what doctrine the Army used and the success or failure of that doctrine. The factors that influenced the Army in its choice of doctrine: specifically the institutional and political factors that affected the shaping of the Army will also be examined. This thesis will attempt to answer two questions. The first is, How well did the US Army apply the experiences of the belligerent nations from 1914 to 1917 to prepare for combat in the European Theater? The second question is, What institutional and political factors may have influenced the implementation of change in the US Army?

There are many aspects of World War I worth study, and there are numerous topics important to this thesis that will not be investigated. This thesis will not solely seek to prove or disprove the effectiveness of tactics on the battlefield; it is concerned more about the thought process and motivation used to develop tactics. Another relevant topic not included in this thesis is the thought process of the European commanders. Their conduct on the battlefield will be taken at face value without consideration of the factors that influenced their decisions. Conditions that affected the collapse of the German Army will also not be investigated. Lastly, the results of the war as a successful or unsuccessful political outcome will not be judged.

Is studying a war almost a century ago relevant to today's Army? Certainly, because there are many parallels between the World War I era and today. The Great War was a period of significant technological change as is today. The warrior of the late 1990s faces rapidly changing technology, as did the military leaders of the early 1900s. Just as techniques to employ aviation and tanks were thrust upon commanders then, the "digitized army" confronts Army leaders of today. Likewise, the Navy is grappling with how best to employ forces in the littorals. Furthermore, a naval officer is an ideal candidate to study the Army during World War I. A naval officer does not have the institutional bias one would expect from an officer writing about his or her own service. The result is a more objective critique.

The question that is relevant and important is whether today's military as an institution can adapt and correctly interpret the significance of military events, new ideas, and technology. Armies, navies, and air forces have limited opportunities to acquire

experience. For the Navy, these opportunities are rare: the most recent battle at sea occurred over fifteen years ago during the Falklands War. Scarce resources demand that an army correctly recognizes what is the best equipment and tactics before entering into conflict. Failure is measured by the number of lives lost on the battlefield. Only time will tell whether the military of the late twentieth century was able to successfully embrace and harness new tactics and technology in order to shape the battlefield.

World War I raged for two and one-half years before United States forces first encountered enemy troops. This period of nonhostility provided a rare opportunity for Army leaders to observe and evaluate the technology and tactics of both the Allied and Central Powers. The battlefields of Europe were the only true test of whether or not the Army could adapt to modern warfare.

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<sup>1</sup>Thomas A. Bailey, *Woodrow Wilson and the Lost Peace* (New York: Macmillan Press, 1944), 2.

<sup>2</sup>Woodrow Wilson, *The Papers of Woodrow Wilson*, vol. 30, ed. Arthur S. Link (Princeton, NJ: Princeton University Press, 1983), 307.

<sup>3</sup>*Ibid.*, 393.

<sup>4</sup>John Patrick Finnegan, *Against the Specter of a Dragon: The Campaign for American Military Preparedness*, (Westport, CT: Greenwood Press, 1974), 37.

<sup>5</sup>Bailey, 4-5.

<sup>6</sup>*Ibid.*, 7.

<sup>7</sup>Woodrow Wilson, *The Papers of Woodrow Wilson*, vol. 41, ed. Arthur S. Link (Princeton, NJ: Princeton University Press, 1983), 463.

<sup>8</sup>Bailey, 9.



<sup>9</sup>Woodrow Wilson, *The Papers of Woodrow Wilson*, vol. 42, ed. Arthur S. Link (Princeton, NJ: Princeton University Press, 1983), 499.

<sup>10</sup>Robert Ayres, *The War with Germany: A Statistical Summary* (Washington, DC: US Government Printing Officer, 1919), 119, 123.

<sup>11</sup>Stanley Karnow, *Vietnam: A History* (New York: Viking Press, 1983), 9.

<sup>12</sup>Ayres, 131, 138.

<sup>13</sup>Russell Frank Weigley, *History of the United States Army* (New York: Macmillan Press, 1967), 568.

<sup>14</sup>Ayres, 99, 102.

## CHAPTER 2

### PRE-WORLD WAR I DEVELOPMENTS

In the decade and a half prior to the United States' entry in World War I, the United States Army witnessed foreign success and failure on the battlefield, incorporated new technology, and trained to new doctrine. In 1904, the Russo-Japanese War provided an opportunity for US observers to witness first hand the state of warfare. The observer's critique of tactics, weapons, and machinery provided an opportunity to confirm or challenge existing tactics and instruction. Accordingly, the Russo-Japanese War played a role in the modification of instruction at the principle forum for training future Army leaders at the Line and Staff School at Leavenworth.

As the first decade of the century ended, the Army conducted its largest peacetime maneuvers to date testing the organization of troops and use of new combat systems. Consequently, major overhauls of the administration and composition of the Army took place. On the eve of the US declaration of war against Germany, the Army had another opportunity to flex its warfighting expertise when troops deployed to Mexico during the Punitive Expedition. Though the mission failed in its objective to capture Francisco "Pancho" Villa, the mobilization once again tested Army capabilities.

#### The Russo-Japanese War

From the opening of hostilities in 1904 until the peace protocol was signed in September of 1905, the Army detailed eight officers to observe the Russian and Japanese armies. Two of the observers Captain Peyton C. March and Captain John J. Pershing would serve in important and influential positions during World War I: Captain March as

Army Chief of Staff and Captain Pershing as the commander of the American Expeditionary Force (AEF).

The war provided an ideal opportunity for the Army to assess the state of modern warfare. Of particular note to the observers was the importance of developing technologies and weapons, particularly communication systems and machine guns. The Japanese used the telegraph and telephone extensively and achieved great success maintaining connectivity between units in the field. Their success, however, was facilitated by the Russian cavalry who did little to interrupt communication lines; hence, one observer questioned whether telegraph and telephone service alone would meet the requirements for field communications against an enemy who actively interrupted communication lines.<sup>1</sup> The Russians, on the other hand, did not apply this technology effectively. Russian telegraph lines were not kept in order and if broken would remain so for days. Though the Russian telephone system received limited use at the beginning of the conflict, its use increased as the war progressed.<sup>2</sup>

The employment of the machine gun by the Japanese was also of great interest to the Army observers. The use of machine guns was limited in the early phases of the war, but their value was quickly demonstrated in both the defense and offense, accordingly the propensity for use increased with time. In the defense, machine guns fortified defensive positions and well-concealed casements increased its potency. The Japanese, who spoke highly of the machine gun, claimed that not one machine gun was knocked out by Russian artillery. In the offense, machine guns provided effective cover for assaulting infantry. With its potential unmasked by employment both in the defense and offense,

the observers predicted that the machine gun would be used extensively in the future and that "the equipment and tactics of the machine gun should receive serious and prompt consideration for our Army." For when hostilities ceased, each of the two Japanese cavalry brigades were equipped with six machine guns while each infantry regiment was equipped with three machine guns.<sup>3</sup>

The observers noted several other facets of the conduct of the war. First was the frequent use of night attacks. The Japanese used the cover of night to bring up and deploy troops thus preventing the loss of troops that would have occurred during daylight. A second aspect was the increased dimensions of the battle area. The front covered by the armies at the battle of Mukden was eighty miles from end to end. Lastly, even though stronger firepower like the machine gun was available, the sword and bayonet were frequently used.<sup>4</sup>

However, to the disappointment of the American observers, the Russo-Japanese War provided little distinctively new warfare. The organization of the Japanese infantry was based on the existing German and French models. Tactics were no more original than organization. The observers reported that the formation of infantry for the attack, the massing of guns and concentration of fire, the use of field fortifications, and the siege of fortified positions were all employed in textbook manner.

Nevertheless, technical lessons were learned and these lessons foreshadowed the conduct of the Great War a decade later. The Americans gained an appreciation for heavier caliber artillery and the growing necessity of indirect fire. Captain March recognized the importance of combined arms and cooperation. He observed, "The

Japanese artillery and infantry work together splendidly. . . the artillery keeps up its fire during the infantry advance, sometimes even until the infantry walks into the burst of their shrapnel.”<sup>5</sup> Captain Pershing formed a much different conclusion. He concurred that artillery could assist attacking infantry by suppressing enemy fire until the infantry reached the enemy’s lines. But, he cautioned that “the preparation of the infantry is not as easy as is usually believed. All their efforts to destroy the enemy’s artillery and trenches is of little avail, it seems to be very difficult.”<sup>6</sup> Despite the prominent role played by artillery, the conclusion reached by the observers was that the key to the Japanese victory, notwithstanding the superiority of the Russians in artillery and cavalry, was the discipline and tenacity of the Japanese soldier.<sup>7</sup>

The French General De Négrier also captured the technical aspects of the Russo-Japanese War. He recognized the effective use of cover and concealment, night attacks, and the need for large caliber artillery and abundant quantities of ammunition. His observations stated that indirect fire replaced direct fire as the means to effectively deliver artillery, and with indirect fire came the requirement for signaling apparatus for the control of batteries.

But most importantly, he also enumerated that the key to Japan’s victory was the aggressiveness of the Japanese warrior. According to General De Négrier, the real legacy of the Russo-Japanese War was that offensive tactics can alone assure victory and the true advantage of attacking troops was “the spirit of taking the initiative.”<sup>8</sup> This lesson of the Russo-Japanese War, the preeminence of the spirit of the offensive, would later epitomize AEF doctrine. Additionally, the verdict that artillery support to infantry was of limited

value was also later manifest in General Pershing's AEF doctrine. AEF doctrine articulated that "An aggressive spirit must be developed until the soldier feels himself, as a bayonet fighter, invincible in battle."<sup>9</sup>

### Army Responsiveness

Army leadership was perceptive of the evolution in warfare taking place from the end of the Russo-Japanese War to the start of World War I. Most notable were machine guns, aviation, and communication. Though machine guns were developed prior to the Russo-Japanese War, the Russo-Japanese War demonstrated their use on a larger scale; consequently, in 1906 the US Army established machine-gun platoons to experiment with machine guns. Two years later the Chief of Staff recommended an additional troop or company in each infantry regiment and cavalry regiment. It was not until 1912 that Congress, the only government body that can increase troop strengths, authorized four machine guns per regiment. In contrast, the European armies had a much greater proportion of machine guns in their armed forces with the French, British, and Germans each employing twenty-four machine guns per division at the beginning of the war. In 1916, Congress appropriated \$12 million for the test and development of the machine gun and by 10 May 1917, the US Army manned four machine guns per regiment.<sup>10</sup>

The airplane was another weapon that was recognized early in its development as having vast military potential. In 1908 Congress appropriated \$200,000 for three officers and ten enlisted men to explore this new field. This modest effort paled in comparison to the European powers: Russia had seventy officers, France had twenty-four officers, and Germany had twenty officers in their respective aviation corps.<sup>11</sup> As aviation technology

advanced, funding continued to lag behind the Europeans. The 1913 appropriations totaled \$125,000 compared to \$7.4 million in France, \$5 million in Russia, and \$5 million in Germany. By 1916 the Signal Corps, the branch that controlled aviation development, possessed only fifteen airplanes with contracts for six more. European air forces were also on the forefront of the tactical employment of aircraft by identifying the requirement for single-function aircraft proficient in performing reconnaissance, fighter, and bombing missions. US aircraft were incapable of fulfilling the bombing role. Signal Corps aviators were experimenting with dropping bombs but could not effectively accomplish this task due to the insufficient power plants on the aircraft.<sup>12</sup> The Army continued to spend money on the development of military aviation and by April 1917 the Army had fifty-five serviceable planes. Unfortunately, all were obsolescent.<sup>13</sup>

The Army attempted to improve communication capabilities as well. The Signal Corps was a strong proponent of the telegraph and telephone and the emerging technology of wireless communication. As demonstrated during the Russo-Japanese War the value of electricity as a "swift and accurate messenger" was considered as an effective means of command and control.<sup>14</sup> By the end of 1916 US aircraft tested a thirty-three pound radio set designed for use in spotting artillery fire that had a range of twenty miles.<sup>15</sup>

Because of the changes in warfare, Army leaders modified field training to reflect the state of military operations. The 1908 field maneuvers were updated by the maneuver umpire Major March to include the improved effects and firepower of modern field artillery, infantry, and machine guns. Additionally, the Signal Corps field tested wireless

communications, and each infantry and cavalry regiment was assigned machine gun platoons. Newly reorganized field artillery regiments were employed tactically for the first time. In the ensuing years, field maneuvers became more complex and continued to provide opportunities to test the suitability of new equipment, tactics, and organizations for modern warfare.

Soon thereafter real world operations tested the validity of army's organization. In 1911, tensions with Mexico increased, and President Taft ordered troops massed on the US-Mexican border as a show of force. In a peacetime first, the US mobilized about 13,000 strong in Texas to form a "Maneuver Division." Valuable lessons were gleamed in the movement of troops by railroad, communications, and the handling of large formations. Also, for the first time in field maneuvers the army employed airplanes. But most importantly, the 1911 maneuver identified and the 1912 maneuver confirmed the need to reorganize and modernize the Army into divisions. Hence, these training events were the catalyst for the wide-scale reforms enacted in the years leading up to the United States' entry in the Great War.<sup>16</sup>

#### Institutional Response

The observations from Russo-Japanese War were quickly passed on to the future staff officers attending the Line and Staff College at Fort Leavenworth, Kansas. Major John F. Morrison, one of the principle observers in Manchuria, reported to Leavenworth in 1906 and over the next six years became the lead tactics instructor at the school. Major Morrison was greatly impressed with the character and discipline of the Japanese soldiers he witnessed in the field and strongly believed that entrenched positions could be



successfully attacked by infantry frontal attacks if soldiers were well trained and well lead. Commanders, he acknowledged, must also be willing to accept casualties to achieve success. Major Morrison's indoctrination in the spirit of the offensive would influence the AEF years later.

Leavenworth was the common source of training for many of the officers who would lead the AEF in World War I. Leavenworth graduates, in short supply and high demand, were assigned predominately to staffs and could therefore easily shape AEF doctrine. Unfortunately, graduates were not adequately prepared to cope with many of the new weapons and techniques found on the modern battlefield. Though the Leavenworth instruction was innovative in the management of armies in the field, a significant weakness in the curriculum was the lack of attention devoted to emerging technologies. For example, by 1916 motor trucks were used throughout the Army, but for Leavenworth students the primary conveyance used in map problems was the horse. Although the Army formed an aero squadron in 1912, little attention was dedicated to military aviation. Likewise, the instruction did not appreciate the effectiveness of machine guns and field artillery instruction was too technical and lacked insight into its tactical employment. Additionally, instruction on the coordination of the combat arms was neglected.<sup>17</sup> Though academically behind the times, the Army conducted a major organizational overhaul in 1916.

#### National Defense Act of 1916

The National Defense Act of 1916 addressed the organizational needs of the Army, but this reform did not go far enough to change the Army into a modern fighting

force. The Army came to realize that its organization was not suited for its present or future requirements and reform was needed. Organizational reform, first proposed as early as 1912, culminated in the National Defense Act of 1916. The Secretary of War recognized that the Army was a scattered force rather than an integrated national army able to effectively train and operate together. The Army was spread out over forty-nine posts in twenty-four states averaging less than 700 men per post. The highest fixed organization was a regiment: permanent brigade and division organizations were unknown to the Army. If war were to break out, a unified army would have to be formed from these units. Therefore the Secretary proposed reorganization along three infantry divisions of two or three brigades with a proper proportion of artillery and cavalry. Cavalry divisions would consist of several cavalry brigades.<sup>18</sup> The new tactical organization of the Army became a reality by a General Order dated 6 February 1913. As a result, the Army was operationally arrayed into four divisions and several brigades and administratively into six geographic commands. Four geographic commands were in the continental United States (Eastern, Central, Western, and Southern Departments); the two remaining commands affirmed the Army's overseas presence (Philippine and Hawaiian Departments).<sup>19</sup> Reform was on its way but was far from yet complete.

The National Defense Act of 1916 continued the reforms enacted three years earlier. The first sweeping change converted state militias to the National Guard. The National Guard was now recognized as the line of defense immediately behind the Regular Army for the purpose of quickly responding to national crises. The National Defense Act of 1916 also created two more classes of soldier in addition to the Regular

Army and National Guard: the Enlisted Reserve Corps and the Volunteer Army.

Members of the Enlisted Reserve Corps were specialists whose civilian occupations were compatible with the technical departments of the Army, notably the Engineer, Signal, Quartermaster, Ordnance, and Medical Corps. The Volunteer Army was to be raised only in time of war. Additionally, the organization of infantry and cavalry regiments was changed by the augmentation of headquarters, supply, and machine-gun companies.<sup>20</sup>

Most importantly, the National Defense Act of 1916 authorized a significant increase in the size of the total Army in peace and established the size of the Army in the event of war. The peacetime end strength was set at 11,450 officers and 217,847 enlisted in the Regular Army (about half were troops of the line) and 17,000 officers and 440,000 enlisted in the National Guard. Wartime strength of the Army was set as 12,030 officers and 292,267 enlisted. The end strength of the Enlisted Reserve was not established. End strengths, to be phased in over a five-year period, translated to an increase in the Army of 34 1/3 infantry regiments, 10 cavalry regiments, 15 field artillery regiments, 93 coast artillery companies, 5 engineer regiments, 2 mounted engineer battalions, and the proportionate number of medical, signal, and quartermaster troops. Though a substantial increase, Congress accepted only about two-thirds of the end strength recommended by the General Staff of 65 infantry regiments, 25 cavalry regiments, 21 field artillery regiments, 263 coastal artillery companies, 7 engineer regiments, 2 mounted engineer battalions, 11 1/2 signal corps battalions, and 8 aero squadrons.<sup>21</sup>

### The Punitive Expedition

The last major Army operation prior to the United States' entry into the Great War was the Punitive Expedition to Mexico in 1916. On the night of 9 March 1916, Francisco "Pancho" Villa and a band of 500-1000 bandits crossed the US-Mexican border and raided Columbus, New Mexico, killing seventeen Americans. On the following day, President Wilson ordered Brigadier General Pershing to assist the Mexican government with capturing Villa. During the next eleven months US troops pursued Villa; he remained elusive. Although the expedition failed, it did highlight the value of the National Guard, the airplane, and motorized transport.

The Punitive Expedition was the first test of the reorganization of the National Guard. Before the National Defense Act of 1916 citizen-soldiers were organized as part of the Regular Army only at the outbreak of war. The National Guard, now integrated during peacetime, mobilized to assist the Regular Army at the start of the Punitive Expedition. In all, more than 75,000 National Guardsmen were called into Federal Service. But when the citizen-soldiers answered the call, the National Guard mobilization was disastrous. Units were short of weapons, ammunition, and manpower. During June and July some Guardsman reported to the Texas heat wearing wool uniforms and overcoats. Training was equally inadequate. Regular Army personnel observed that almost all of the units had received only rudimentary training. Yet for all the problems encountered, the mobilization experience was valuable. The National Guardsman could not replicate their three months of training during weekend drills or annual training exercises.<sup>22</sup>

Tactically, the Punitive Expedition provided real-world trials for aircraft, motor transport, and the cavalry. The Punitive Expedition was the first time a tactical military aviation unit was put in the field. Eight aircraft of the 1st Aero Squadron flew multiple missions, including aerial reconnaissance providing troop locations and as couriers of mail and dispatches. Squadron pilots also experimented with an automatic camera capable of taking a continuous string of pictures over the terrain that the airplane traversed. The camera, which proved to be one of the most valuable tools in aerial reconnaissance, provided pictures in detail greater than any road map available.

Any success the squadron had, however, was tempered by the performance of the aircraft and skill of the pilots. The grossly underpowered aircraft were unable to climb above 10,000 feet in order to ascend above the Sierra Madre Mountains. Limitations on power and climbing ability also restricted the amount of equipment that could be taken aloft. Pilot skill was also lacking. During the first month of operation, five of the eight aircraft were wrecked, one was abandoned after a forced landing, and the remaining two were rendered unsafe for further flights. New aircraft arrived in May 1916, but the high altitude and dry climate made the wooden propellers unserviceable. This problem was quickly solved when the manufacturing of propellers relocated to Columbus, New Mexico. The experience gained by pilots during the Punitive Expedition demonstrated the need for aircraft of greater speed, reliability, and weight-carrying capacity.<sup>23</sup>

Similar to the experience with the military aviation, the Punitive Expedition was the first opportunity for the Army to use motor transportation on a large scale. The Army first purchased motor trucks in 1907, and at the start of the expedition, the Southern

Department requested two motor truck companies of twenty-seven 1 1/2-ton trucks. By the end of June 1916, 588 motor trucks were in the theater. Motor trucks provided Brigadier General Pershing the means to transport supplies over untamed country in rapid order.<sup>24</sup> The impact of the use of motor trucks to transport troops (other than the injured) was not realized since many commanders thought it less manly to be transported and hence reflected a weakness in unit discipline and training. Terrain in the first months of the Punitive Expedition was favorable for the operation of motor trucks, but soon the hard ground became cut with deep ruts and potholes rendering trails almost impassable. The trail situation became worse during the rainy season, and the rough terrain exacerbated problems with repair and maintenance which was complicated by a shortage of experienced repairmen. The fact that several different models of motor trucks with incompatible parts were in use enlightened the Army to the idea that all equipment in a company should be standard.<sup>25</sup>

Motor transports were used not only logistically but tactically as well. The tactical use of the automobile was successfully demonstrated by an up and coming cavalry officer, First Lieutenant George S. Patton. Lieutenant Patton pursued a band of Villa's followers by vehicle and killed three bandits, leaping directly from the cars to fight.<sup>26</sup>

The Punitive Expedition also reinforced the importance of the Cavalry to Lieutenant Patton and Brigadier General Pershing. Lieutenant Patton published an article in the January 1917 edition of the *United States Cavalry Association Journal* titled "Cavalry Work of the Punitive Expedition" in which he boldly pontificated on the value

of the cavalry. The article included a quote from Brigadier General Pershing stressing the importance of cavalry operations. He said "For open warfare under modern conditions, it is more necessary than ever to have troops that are able to move rapidly from one place to another over any kind of country and arrive at the point of action fit for a fight."<sup>27</sup>

Critical to the success of the cavalry, General Pershing continued, was proficiency in combat both mounted and dismounted.<sup>28</sup> While commander of the AEF, General Pershing believed the victory could only be achieved by forcing the enemy out of the trenches and engaging the enemy in "open warfare."

### Summary

In the twelve years between 1904 and 1916, the Army was far from idle. The Army sent observers to Manchuria to see first hand the conduct of a modern war. Though they claimed to see nothing new tactically, the potential of new and emerging technology was recognized. This seems to be a contradiction. Nevertheless, the chief lesson observers learned in the Russo-Japanese War was the value of a systematically trained and disciplined soldier. Following the Russo-Japanese War, the Army exhibited foresightedness by experimenting and field testing weapons and technology--principally the airplane, motorized transportation, and communication systems--which were thought to be able to significantly affect the battle. Maneuvers in the field identified shortcomings in the Army's structure which eventually led to broad and sweeping changes in organization. Congress mandated a considerable increase in the Army: however, the increase was substantially less than what the General Staff considered appropriate.

Additionally, operations in Mexico tested the adequacy of the National Guard, aviation, motor transport, and the cavalry.

During the decade before the outbreak of war in Europe, the elements of what would define modern battle in 1914 emerged: machine guns, artillery, wireless communication, combined arms, aviation, and motor transport. The challenge for the Army's leadership was first to recognize these components and then to synthesize them into cohesive doctrine. At the first glimpse, the Army appears to have been able to recognize changes on the battlefield. The more important element, the fusion of these elements into a workable guidance for use by the battlefield commanders, will be explored in the following chapters.

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<sup>2</sup>Peyton C. March, War Department, Office of the Chief of Staff, Second (Military) Information Division, *Reports of the Military Observers Attached to the Armies in Manchuria during the Russo-Japanese War*, Part I, (Washington: Government Printing Office: 1906), 153.

<sup>3</sup>March, 51; Kuhn, Joseph E., 230; March, 53; John T. Greenwood, John T. "The US Army Military Observes with the Japanese Army During the Russo-Japanese War (1904-1905)" *Army History*, (Winter 1996): 6-8.

<sup>4</sup>Kuhn, 228-30.

<sup>5</sup>Greenwood, 6; John F. Morrison, War Department, Office of the Chief of Staff, Second (Military) Information Division, *Reports of the Military Observers Attached to the Armies in Manchuria during the Russo-Japanese War*, Part I, (Washington: Government Printing Office: 1906), 6.

<sup>6</sup>*Ibid.*, 6.

<sup>7</sup>*Ibid.*, 98.



<sup>8</sup>De Négrier, "Some Lessons of the Russo-Japanese War," *Journal of the Royal United Services Institution* 50. No. 341, (July 1906): 910-19.

<sup>9</sup>Timothy Nenninger, "Tactical Dysfunction in the AEF 1917-18" *Military Affairs*, October 1987, 177.

<sup>10</sup>Jonathan M. House, *Toward Combined Arms Warfare: A Survey of 20th Century Tactics, Doctrine, and Organization* (Fort Leavenworth KS: US Army Command and General Staff College, 1984), 10; US War Department, *Annual Reports, 1908* (Washington: Government Printing Office, 1908), 366; US War Department, *Annual Reports, 1916* (Washington: Government Printing Office, 1916), 60-61; John B. Wilson, *Maneuver and Firepower: The Evolution of Divisions and Separate Brigades* (Washington: United States Army Center of Military History, 1998), 48.

<sup>11</sup>US War Department, *Annual Reports, 1908*, 44.

<sup>12</sup>US War Department, *Annual Reports, 1913* (Washington: Government Printing Office, 1913), 25-26, 789.

<sup>13</sup>Leonard Ayres, *The War with Germany: A Statistical Summary*, (Washington: Government Printing Office, 1919), 85.

<sup>14</sup>US War Department, *Annual Reports, 1909* (Washington: Government Printing Office, 1909), 200.

<sup>15</sup>Signal Corps Aviation School, San Diego, California, "Notes on Aero-Radio Development," *Infantry Journal* 13 no. 4, (Jan 1917): 405-06.

<sup>16</sup>Charles Douglas McKenna, "The Forgotten Reform: Field Maneuvers in the Development of the US Army 1902-1920" (Ph.D. diss., Duke University, 1981), 117-19, 134-40, 147-49.

<sup>17</sup>Nenninger, Timothy K, *The Leavenworth Schools and the Old Army: Education, Professionalism, and the Officer Corps of the United States Army, 1881-1918* (Westport, CT: Greenwood Press, 1978), 87-88, 103-04.

<sup>18</sup>US War Department, *Annual Reports, 1912*, (Washington: Government Printing Office, 1912), 15-19.

<sup>19</sup>US War Department, *Annual Reports, 1913*.

<sup>20</sup>US War Department, *Annual Reports, 1916*.

<sup>21</sup>US War Department, *Annual Reports, 1916*.

<sup>22</sup>Edward M. Coffman, *The War to End All Wars: The American Military Experience in World War I*, (New York: Oxford University Press, 1968), 14-15.

<sup>23</sup>Benjamin D. Foulois, *From the Wright Brothers to the Astronauts: The Memoirs of Benjamin D. Foulois* (New York: McGraw-Hill, 1968), 236-45.

<sup>24</sup>US War Department, *Annual Reports, 1916*.

<sup>25</sup>Frank Tompkins, *Chasing Villa* (Harrisburg, PA: The Military Service Publishing Company, 1934), 246-52; US War Department, *Annual Reports, 1916*, 195.

<sup>26</sup>Martin Blumenson, *The Patton Papers* (Houghton Mifflin Company: Boston, 1972), 336-37.

<sup>27</sup>George S. Patton, Jr., "Cavalry Work of the Punitive Expedition," *Journal of the United States Cavalry Association*, vol XXVII, no. 113, January 1917, 432.

<sup>28</sup>*Ibid.*, 432.

## CHAPTER 3

### EVOLUTION OF WARFARE 1914-1918

A month of diplomacy following the assassination of Archduke Francis Ferdinand was unable to curb the tide of war on the European continent. Austria-Hungary, which placed responsibility for the murder of the Archduke on Serbia, declared war against Serbia on 28 July 1914. Distressed by the declaration, Tsar Nicholas II mobilized the Russian Army against Austria-Hungary and her ally, Germany. In response, Germany declared war against Russia on 1 August 1914. On 2 August 1914, the German army stormed west occupying Luxembourg. The following day the German Army advanced through Belgium and declared war against France. Britain, in response to the violation of Belgian's neutrality by the Germans, declared war against Germany the next day.

The German's advance into France continued until stopped at the Battle of the Marne in September. The "Race to the Sea" was on but neither side could outflank the enemy so by the winter of 1914 the war became a tactical stalemate. Subsequently a line of trenches 450 miles long stretched from the Swiss border to the North Sea. Allied and Entente commanders looked for new methods to penetrate enemy defenses and restore maneuver to the battlefield. Over the next three years of conflict each side developed and refined tactical and technological solutions in an attempt to attain a breakthrough. For the British and the French their greatest success came after refining artillery operations and employing the combined arms; German doctrine evolved into "storm troop" tactics. The purpose of this chapter is to define "state of the art" on the battlefield. This was the

standard against which the preparedness of the American Expeditionary Force would have to be tested.

With the absence of maneuver warfare the dilemma facing Allied commanders was the penetration of enemy trench systems. A typical attack went like this. The attack began with preparatory direct fire artillery bombardments against enemy trenches and artillery batteries. The objective of the artillery bombardment was to weaken enemy resistance before the infantry advanced. For the first two years of the war the predominant ammunition in the British inventory was shrapnel and though an effective anti-personnel weapon, shrapnel was ineffective against wire protecting enemy defenses. Infantry then followed through the penetrations made by the artillery over a quagmire of mud and shell holes. Unfortunately, any success achieved could not be exploited because attackers in the initial assault were usually exhausted--if they survived the decimation at the hands of German machine guns. Direct firing artillery could only continue support if it moved forward with the infantry. Additionally, the long duration required by the preparatory artillery barrage was advantageous to the defender by allowing sufficient time to bring forward reserves (made easier by the use of railroads). The defender also maintained the ability to concentrate defensive artillery fire against newly captured areas that were now exposed.<sup>1</sup> To overcome this dilemma Allied commanders improved artillery methods. Artillery became more effective once indirect fire and improved ammunition were introduced to the battlefield.

The lack of skill in firing indirect artillery was responsible for the limited effectiveness of massed British artillery in creating penetrations. Indirect fire afforded

protection from the enemy by firing at targets that can not see from where the artillery originated. At the start of the war the British and French relied on direct fire with adjustments made at the gun placement. Not until November 1915 did French artillery regulations list indirect fire procedures. The British experimented with indirect fire during the Boer War but inferred that in mobile warfare it was impractical. Consequently the British Royal Artillery did not have updated charts to develop a grid coordinate system for adjusting indirect fire in France.<sup>2</sup> On the other side, from experience over thirty years earlier during the Franco-Prussian War, the Germans recognized the ability to mass fires against targets they could not see. Specifically, the Germans used indirect fire to protect gunners from machine guns.<sup>3</sup> Though the best prepared artillery of any major army, the German army did not hold artillery in high regard and it was not until February 1916 that Germans possessed corps artillery and even then cooperation between corps and division artillery was nonexistent.<sup>4</sup>

Indirect fire became more effective when procedures for forward observation and aerial observation were developed. Air observers and aerial photography was first used at Neuve Chappelle in 1915 and was used routinely by 1916.<sup>5</sup> By 1917 aerial photographs of the terrain provided information accurate enough to direct fire without the aid of an observer. In addition, compensating fire for the effects of weather, barrel wear, and deviations between ammunition lots also enhanced the accuracy of artillery.<sup>6</sup>

Though artillery guns employed in August 1914 inflicted significant damage to infantry troops, the firepower of artillery became more devastating as the war progressed primarily as a result of the introduction of new fuses, larger caliber guns, greater

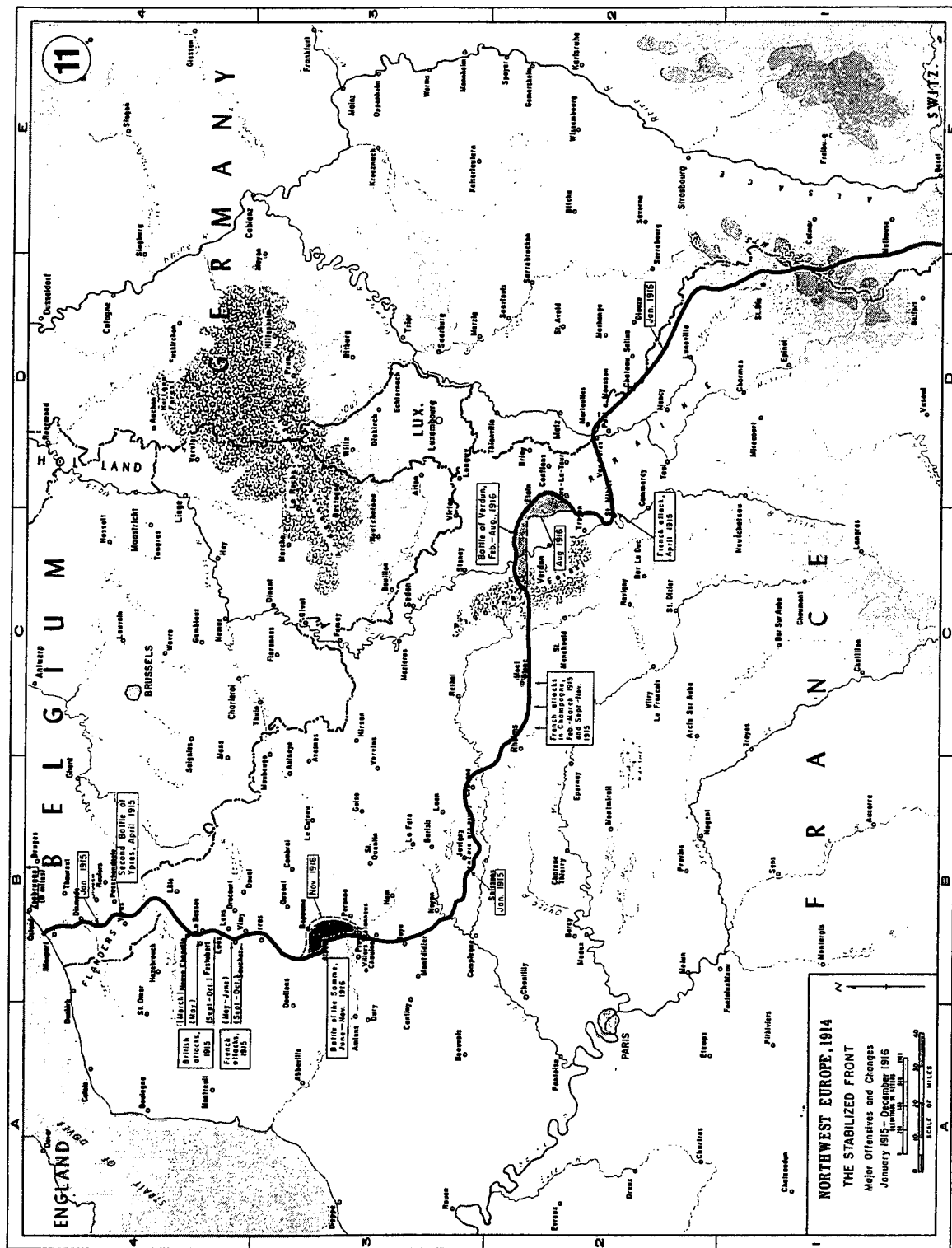


Figure 1. The Stabilized Front. Source: *Campaign Atlas to the Great War*, edited by Thomas E. Griess (West Point, NY: US Military Academy, 1978), map plate 11.

production of ammunition, and more effective firing techniques. High Explosive (HE) ordnance was not effective against wire because the fuses available in 1914 were not sensitive enough to detect wire and then explode. Subsequently the fuse buried itself in the ground before detonating. Shrapnel shells, effective against personnel, were the best shells against wire at the time though they were still relatively ineffective. By the end of 1917 the development of the Number 106 fuse by the British solved the wire-cutting problem. The Number 106 fuse caused the shell to explode just as it contacted the ground thereby focussing the blast horizontally. The new fuse benefited the infantry in two ways. First, the greater effectiveness meant shorter preparatory barrages thereby enhancing the element of surprise. Second, it did not leave shellholes that would impede the progress of the infantry.<sup>7</sup>

Tactical changes, in addition to technical advancements, greatly improved artillery effectiveness. The Battle of the Somme taught the British the importance of close cooperation between artillery and infantry. According to one British commander: "Experience has shown that it is far better to risk a few casualties from an occasional short round from our own artillery than to suffer the many casualties which occur when the bombardment is not closely followed up."<sup>8</sup> Thus the creeping barrage was developed. The idea behind the creeping barrage was that a wall of bursting shells would precede the advance of the infantry. The wall of shells would cease regularly at a predetermined distance every few minutes in order to allow the assault troops to charge forward. This would be repeated in follow on phases as the infantry gained specified objectives. Command and control was critical to the success of the creeping barrage. The limitations

of early communication gear made this coordination difficult though improvements in communication gear in the later years of the war facilitated infantry and artillery coordination.<sup>9</sup> Secrecy and surprise were vital to achieve success, but they could only be acquired by shortening the preparatory barrage. By 1917 the British resolved this trade off between artillery fire duration and effectiveness by concealing the timing and location of an assault with smoke shells and false starts. As a result infantry advances could be achieved at a rate of 100 yards in two minutes.<sup>10</sup>

The material strength of Allied offensives, the growing effectiveness of artillery, and the reluctance of the German Army High Command (die Oberste Heeresleitung (OHL)) to give up territory gained led to heavy German casualties and formed the foundation for the development of the German's elastic defense-in-depth. The defense did have many advantages. First, preparatory artillery fire might kill scores of enemy soldiers but a few well-placed and protected machine guns nests could easily survive and strike down advancing troops. Second, the surviving defending artillery demonstrated little difficulty raining shells on attacking forces that progressed forward slowly. Third, in the early stages of the war, Allied artillery could not move forward and provide continuous support to the infantry during the attack. Lastly, long, drawn-out preparatory artillery barrages diminished the element of surprise and delayed the attack long enough for the Germans to utilize their extensive railroad and communication networks in the rear to transfer fresh troops to the front.<sup>11</sup>

From their experience defending against the Allied offenses of 1915, the German's discovered the importance of layered defenses. In November 1916 the



Germans published their latest edition of *The Principles of Field Construction* which outlined new defensive regulations. Defensive positions consisted of three zones: the outpost zone, the battle zone and the rearward zone. The outpost zone provided intelligence, warned of impending attacks and disrupted and contained enemy raids. Separating the outpost zone and the battle zone was a series of three trenches referred to as the main line of resistance. Ideally the main line of resistance was on a reverse slope thus providing defending forces the element of surprise, concealment from ground observation, and protection from enemy artillery. The battle zone extended from the main line of resistance by fifteen hundred to three thousand meters. A second series of trenches, the artillery protective line, was the rear boundary between the battle zone and the rearward zone. Behind the battle zone extended the rearward zone. This plan provided flexibility by allowing German soldiers to move to the front, rear, or flank when subjected to Allied artillery fire. If under heavy fire, soldiers would shift from shell hole to shell hole to escape artillery fire and avoid observation from aerial artillery spotters. The Germans also built machine gun strongholds, mostly in the battle zone, to lay waste to advancing enemy soldiers. Well-timed and orchestrated counterattacks were conducted by the Germans to further the effectiveness of the defensive system.<sup>12</sup>

The Germans developed offensive tactics to complement their strong defensive system. The seminal work on these new tactics were ironically not of German origin, but of French. In the early summer of 1916 the Germans found a copy of pamphlet authored by a French officer, Captain André Laffargue, entitled "The Attack in Trench Warfare." The pamphlet was immediately translated into German and became the cornerstone of an

official German training manual.<sup>13</sup> Captain Laffargue described an attack that would infiltrate the enemy's defensive zone as deep as possible, concentrating the attack on the enemy's main centers of resistance. Assault troops would then lead the attack following an intense artillery barrage that would extend in depth to the rear. The Germans enhanced this tactic by introducing "Stosstrupps," or "storm troops." The "storm troops" were ten or eleven man units armed with light machine guns, trench mortars, grenades, and flame-throwers, who were tasked to infiltrate enemy lines as swiftly as possible and exploit any advantage gained by the rapid attack. This tactic was first experimented with in 1917 on the eastern front before it became the principal method of attack in the west.<sup>14</sup>

Since traditional weapons were unable to break the impasse on the western front, the Allied and Central Powers introduced new weapons or improved existing technology in the hope of achieving victory. These were, most notably, gas, the tank, and aviation. None of these weapons, however, proved decisive on the battlefield. The problem with gas was its unpredictability. Sudden shifts in the wind could actually drive the gas clouds back over friendly troops as experienced by the British at Loos in September 1915. Issuing gas masks also negated the effect of gas.<sup>15</sup>

The British and French developed the tank as a means to cut wire protecting enemy trenches in effect to achieve the result that artillery barrages could not realize. Tanks were first fielded on 15 September 1916 when thirty-six tanks were employed during the Battle of the Somme. The tank was not an instantaneous success. Few tanks were actually involved in combat due to mechanical problems and the challenge of traversing a cratered and entrenched battlefield.<sup>16</sup> The following year at the Third Ypres,

ground and weather prevented their effective use. It was not until Cambrai in November 1917 that tanks were first used offensively en masse. The tank's slow speed, poor reliability, limited range, and scarce numbers made it unreasonable to assume the tank would prove decisive, however, the joining of tanks and infantry would prove to be a formidable combination by the end of 1917.<sup>17</sup>

By 1917, aircraft played a more substantial role in ground operations and deep attacks. Aircraft were tasked to strafe enemy troops as British aircraft demonstrated at the Somme in 1916. Similarly in July of 1917, German aircraft bombed British troops attacking Pilchem Ridge. In 1918 the British employed aircraft to destroy anti-tank guns while German aircraft conducted anti-tank missions, and French aircraft destroyed German reserves well behind enemy lines.<sup>18</sup> Aircraft were no longer limited to providing aerial photography and artillery spotting.

By the fall of 1917 the British and Germans refined their tactics to the extent that they would be used with minor modification for the remainder of the war. The coordination of the combined arms by the British and the storm troop tactics of the Germans were each manifest at the Battle of Cambrai. Though it would not be until later that the British used all the combined arms-- infantry, tanks, aviation, and artillery-- Cambrai did foreshadow most of the elements of British and German tactics envisioned to break the deadlock on the Western Front in the last year of the war.

Cambrai was an excellent site to employ the tank because of the dry and open terrain, the concealment provided by nearby Havrincourt Wood, and the weak German defenses.<sup>19</sup> The basic concept of the operation was to execute a surprise penetration of

the Hindenberg Line without preliminary artillery preparations. The relatively short twelve hours artillery preparation was designed to prevent the Germans from sending up reinforcements. Deep fields of wire that would have taken several weeks bombardment and thousands of tons of shells to cut protected the Hindenberg Line, the most formidable entrenched system on the Western Front.<sup>20</sup>

At twenty minutes past six on the 20 November 1917, without sustained artillery preparation, nine battalions in a line of 378 fighting tanks rolled forward screened by smoke in front of eight British infantry divisions. In the air, 289 aircraft provided an umbrella for the tanks and infantry. The Germans were taken completely by surprise. The tanks cut swaths through the wire, destroyed machine gun nests, and enfiladed enemy trenches. To overcome the challenge of traversing trenches large bundles of brushwood (*fascines*) were deployed into the trenches by the tanks.

By the time the day was over, the British advanced four miles on a six-mile front, the equivalent of three months of fighting--and higher casualties--at the Third Battle of Ypres.<sup>21</sup> Six thousand prisoners were taken along with 100 guns at the expense of 65 tanks lost by enemy action (an additional 114 tanks were lost due to mechanical failures or ditching). Exhausted tank crews and no tank reserves allotted prohibited further advance. The cavalry, who was held back to exploit the success of the tank and infantry, was rendered ineffective by machine guns. Unfortunately for the British, strategic Bourslon Wood, a nest of machine guns on the left flank of the battlefield, remained in enemy control. By the following day, efforts to advance through Bourslon Wood failed and the entire operation started to lose momentum. Fierce attacks and counter-attacks

continued over the next week until the British finally captured Bourlon Woods--their final advance of the battle.<sup>22</sup>

Precisely what the British hoped to avoid, the tapering off of the British offensive provided an opportunity for the Germans to rush forward reinforcements and counter-attack with a new offensive strategy. General Oscar von Hutier at Riga successfully demonstrated storm troop tactics on the eastern two months before the Battle of Cambrai. On 30 November 1917 a short but intense bombardment of gas and smoke shells prepared the way for an infiltrating infantry attack. The barrage was of great depth in order to destroy the enemy's area and displaced up and down, from front to rear, and then back again with the intent to neutralize British artillery. Following the bombardment infantry penetrated weak points in the British lines and surrounded strongpoints with small groups armed with light machine guns and mortars. Storm troops followed up rapidly to eliminate isolated enemy positions. During the next few days the Germans continued their progress and most of the territory originally gained by the British was re-taken.<sup>23</sup>

The Battle of Cambrai was not a decisive battle because neither side was able to exploit their success. The inability to turn the British advance into a decisive victory can be found in two faults in the plan. First and most importantly, was the lack of reserves. The plan called for a tank assault along the entire front instead of against selected tactical positions. Therefore, no tanks were held back in reserve. Additionally, potential reserves of one hundred heavy guns and five divisions were already committed to the Italian Front. Without reserves the attack could not press forward. Second was the lack of close mutual support between the infantry and the tanks exhibited by some British divisions.

The infantry was too far behind the tanks and as a result, the infantry lost track of gaps made by the tanks. The separation between the infantry and the tanks prohibited infantry assistance when the tanks encountered close fire over the trench ridges. Machine gun and field gun fire subsequently stopped the tank advance. In addition, the vulnerability of tanks in the open was demonstrated by one solitary German artillery officer who single-handedly destroyed sixteen of the sixty-five tanks destroyed by enemy action. Better infantry support could have taken out these gunners.<sup>24</sup>

The German counter-attack reclaimed ground lost to the British. Using a combination of well-orchestrated artillery and storm troopers, the aim of the counterattack was to achieve three goals: surprise the enemy, deprive the enemy of artillery support, and to surround enemy troops so that they could be annihilated.<sup>25</sup> The irony of the German success is that these were the objectives that proponents of tanks desired. During this battle the artillery-storm trooper combination proved to be a force comparable to the tank.<sup>26</sup>

Storm troop tactics were further refined and used four months later. In the early months of 1918 Generals Hindenburg and Ludendorff realized the need for offensive action before the weight of American troops became too difficult to overcome. General Ludendorff rid his staff of the old-fashioned idea of infantry attacking in waves according to a rigid plan. The revised method of attack called for machine gun scouts to be the attackers in front whose mission was to find weak points in the enemy line. This was contrary to French and British tactics that invariably attacked the German's strongest positions. Once the weak spots were located, the machine gun scouts signaled with flares

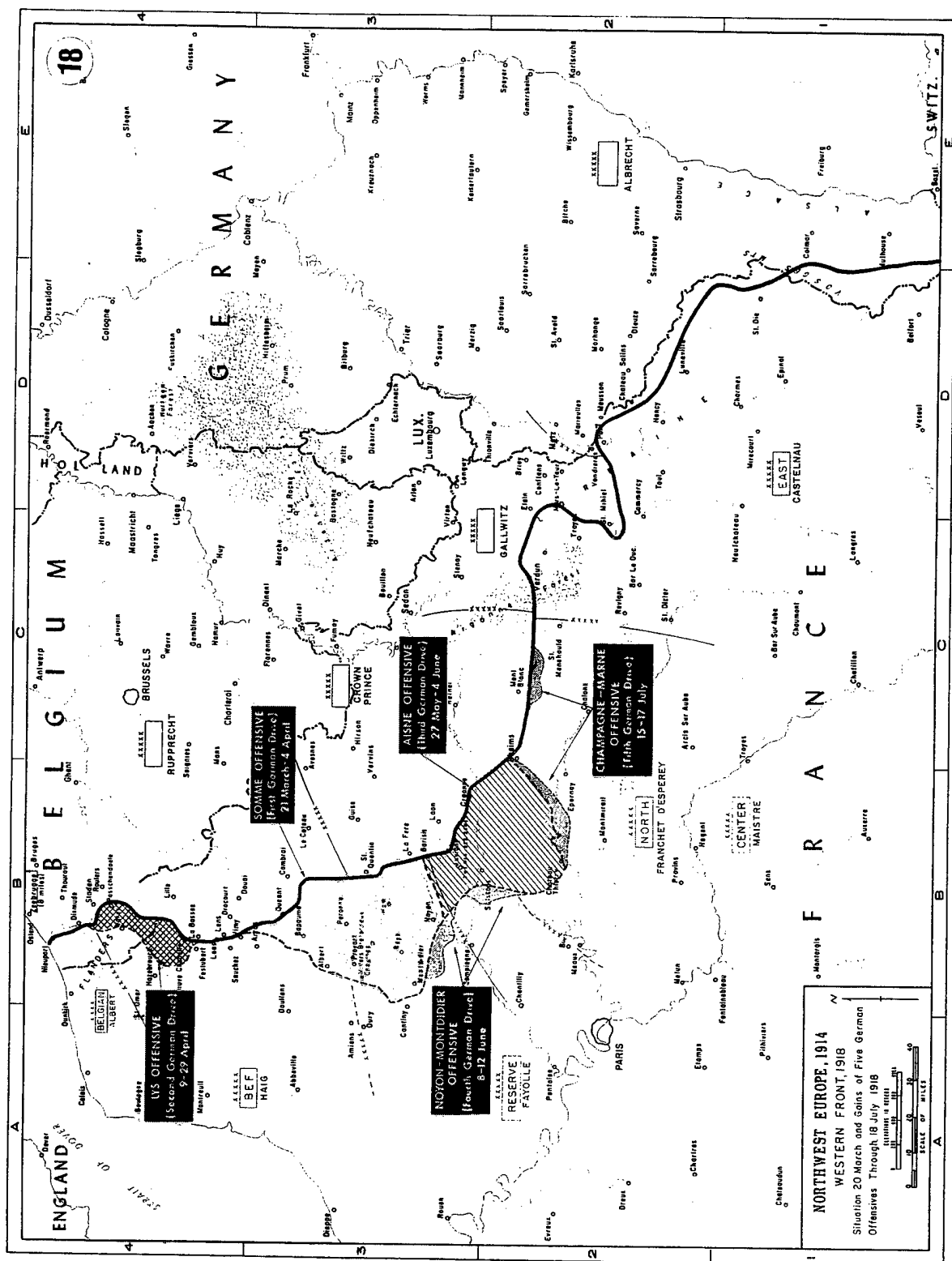


Figure 2. Western Front 1918. Source: *Campaign Atlas to the Great War*, edited by Thomas E. Griess (West Point, NY: US Military Academy, 1978), map plate 18.

for the infantry to advance to those points. The fastest units set the pace and enemy strongpoints were bypassed. In addition, the modified plan of attack consisted of a short intensive artillery preparation, a creeping barrage, massive infiltration, and continued forward movement. Operation "Michael" commenced on 21 March 1918 and the German infiltration tactics were a success; by 30 March 1918, the British retreated toward Amiens. To the north General Ludendorff's forces attacked near Arras but many of his best soldiers were killed or wounded. Hence, this part of the offensive ceased on 5 April 1918. General Ludendorff then abandoned his principle of exploiting weakness by not exploiting the breakthrough in the south. Additional offensives were launched on 9 April 1918 and 27 May 1918 using similar tactics.<sup>27</sup>

### Summary

By the end of 1917 the British and Germans each had developed tactics they anticipated would break the stalemate on the western front and achieve victory after three years of appalling devastation. The British advanced technology and tactics to improve the cooperation between infantry, tanks, aviation, and artillery. The Germans on the other hand nurtured aggressive infantry tactics to rapidly exploit penetrations in enemy lines. Both were based on experience and experimentation. This was the battlefield environment the US Army would encounter in 1918. The following chapters will explore if the US Army was able comprehend this battlefield evolution and improve upon it or fight according to it's own set of rules.

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<sup>1</sup>Jonathan M. House, *Toward Combined Arms Warfare: A Survey of 20th Century Tactics, Doctrine, and Organization* (Fort Leavenworth, KS: Combat Studies Institute, U.S. Command and General Staff College, 1984), 24.



<sup>2</sup>House, 20.

<sup>3</sup>Jonathan Bailey, *The First World War and the Birth of the Modern Style of Warfare* (UK: The Strategic and Combat Studies Institute) 1996), 7-8.

<sup>4</sup>Bailey, 11-16.

<sup>5</sup>Paddy Griffith, *Battle Tactics of the Western Front: The British Arm's Art of Attack 1916-1918* (New Haven and London: Yale University Press, 1994), 140.

<sup>6</sup>Bailey, 14; and Griffith, 137-38.

<sup>7</sup>Griffith, 140.

<sup>8</sup>Ibid., 65.

<sup>9</sup>House, 22.

<sup>10</sup>Griffith, 144-45.

<sup>11</sup>Timothy T. Lupfer, *The Dynamics of Doctrine: The Changes in German Tactical Doctrine During the First World War* (Fort Leavenworth, KS: Combat Studies Institute, U.S. Command and General Staff College, 1981), 3-4.

<sup>12</sup>Lupfer, 13-20.

<sup>13</sup>Graeme Chamley Wynne, *If Germany Attacks* (London: Faber and Faber Ltd., 1940), 58.

<sup>14</sup>Holder H. Herwig, "The Dynamics of Necessity: German Military Policy During the Great War," *On the Effectiveness of Military Institutions: Historical Case Studies from World War I, The Interwar Period, and World War II*, Vol. I, ed. Allan Millet and Williamson Murray (Boston: Allen & Unwin, 1988), 140.

<sup>15</sup>Wynne, 69-72.

<sup>16</sup>J. F. C. Fuller, *The Conduct of War 1789-1961* (New Brunswick, NJ: Rutgers University Press, 1961), 175.

<sup>17</sup>Griffith, 165-69.

<sup>18</sup>Bailey, Jonathan, 15.

<sup>19</sup>John Buchan, *Nelson's History of the War* (London: Thomas Nelson and Sons, Ltd, c. 1928), 96-97; Johnson, Douglas Wilson, *Battlefields of the World War, Western*

*and Southern Fronts, A Study in Military Geography* (New York: Oxford University Press, 1921), 167.

<sup>20</sup>Fuller, 175.

<sup>21</sup> Fuller, 353.

<sup>22</sup>John Buchan, *Nelson's History of the War* (London: Thomas Nelson and Sons, Ltd, 1928), 107; John Terraine, *The Great War 1914-18* (New York: The MacMillan Company, 1965), 347-48; US, Department of the Army, United States Military Academy. *The Great War* (West Point: Department of History, 1979), 231.

<sup>23</sup>Griffith, 354-55.

<sup>24</sup>B. H. Liddell-Hart, *The Real War 1914-1918* (Boston: Little, Brown, and Company, 1930), 352; John Terraine, *The Great War 1914-18* (New York: The MacMillan Company, 1965), 348.

<sup>25</sup>Trevor N. Dupuy, *The Evolution of Weapons and Warfare* (Fairfax, VA: Hero Books, 1984), 225; Paddy Griffith, *Forward into Battle: Fighting Tactics from Waterloo to Vietnam* (Strettington, Sussex, UK: Anthony Bird Publications, 1981), 81.

<sup>26</sup>Griffith, 81.

<sup>27</sup>John Laffin, *British Butchers and Bunglers of World War One* (Phoenix Mill, UK: Alan Sutton Publishing, 1989), 135-46.

## CHAPTER 4

### LESSONS OF WARFARE

Often the best way to figure out how to do something is see how others proceed and imitate what works and disregard what does not. The United States Army experienced such an opportunity between the time World War I started in 1914 and US troops entered battle lines three years later. Chapter 3 discussed the evolution of warfare from 1914 through the German offensive in the spring of 1918 illustrating the progression of successful techniques on the battlefield. While the Allied and Central Powers struggled to determine how victory could be achieved, the US Army observed lessons through direct observation, discussions with foreign officers, and the study of documents from both sides. This chapter begins with a discussion of the recurrent ideas relating to the combat arms--cavalry, infantry, field artillery, tanks, aviation--from experiences and observations by American and foreign officers in battle and during training exercises. Professional journals provided a forum for the open discussion of current events and frequently published articles on military experiences and lessons from both Allied and Central Powers. Though the authors of the articles submitted for publication in the branch journals could not be considered the collective voice of the US Army, these articles were discussion points that instigated debate over solutions to the problems of modern warfare. Next, this chapter examines whether or not the US Army modified doctrinal publications to reflect the facets of modern battle. Lastly, this chapter examines the first sustained US commanded offensive with strictly US Corps, Meuse-Argonne, to

see how the American Expeditionary Force fought--whether in accordance with existing US doctrine, existing Allied doctrine, or with doctrine devised on its own.

### Cavalry

The US Army Cavalry found itself at a crossroad after 1914. With a heritage and tradition of brilliant exploits, it was a branch that many believed lost its usefulness on the western front as a result of siege warfare and would soon be replaced by new systems, specifically the automobile and airplane. Proponents of the cavalry were quick to cite examples where cavalry was effectively used, especially on the eastern front where trench warfare was not the norm and sufficient room to maneuver existed. Nevertheless, as the war quickly turned from one of maneuver to siege warfare due to the lack of open flanks, the likelihood of the cavalry being a decisive element abruptly vanished.

The battles that most military observers identified with cavalry success occurred during the initial phases of the Great War. On 22 August 1914, the British Army took up defensive positions at Mons, 150 miles northeast of Paris to thwart the initial advance of the German Army. Stationed in the rear and positioned to form a strong mobile defense was the cavalry division. After vigorous fighting, front line British troops started to withdraw on 26 August 1914. The cavalry was called up from the reserve and successfully covered the retreat. On 28 August 1914, the British retreated towards the Compèigne-Soissons line while pursued by the German cavalry. The retreat continued until 3 September 1914 when the British and German cavalry withdrew to their respective flanks while the armies fought in close contact. Cavalry battles continued into October with success and failure on both sides. The subsequently named Battle of the Marne

concluded as the British and French took up defensive positions forming a line of trenches from the English Channel to Switzerland.<sup>1</sup> Though cavalry was credited with protecting the Allied forces that stopped the advancing German army short of Paris, the Battle of the Marne also manifested the vulnerability of cavalry. In offensive action the cavalry took heavy losses. For example, on 24 August 1914, the Second British Cavalry Brigade charged against the Germans who slaughtered the brigade with murderous fire from about twenty concealed machine guns at a range of 150 yards.<sup>2</sup>

Champagne was the scene of another battle that bolstered military leader's confidence in the cavalry. The cavalry's success intensified General Joffre's belief in its utility: "German prisoners say no other action along the Champagne front proved such a surprise to their commanders as the appearance of the French cavalry in the thick of fighting."<sup>3</sup> Even after the establishment of trench warfare the French still anticipated returning to shock action, however, they cautioned that fighting dismounted "has taken on a fundamental importance, and preparation for it should be actively pushed."<sup>4</sup>

Support for the cavalry was not limited to military circles. An editorial from the *Washington Times* argued in favor of the cavalry citing the use of US cavalry on the Mexican border and British and French cavalry stopping the German drive to Paris. The editorial continued that the lack of cavalry prevented the Germans from conquering the retreating Russian armies in the east.<sup>5</sup> Ironically, more than one US cavalry officer, including Second Lieutenant George Patton, expressed his opinion that the press was partly to blame for the decline in enthusiasm for the cavalry. Reporters wrote very little about the tactical employment of the cavalry because "it was well out to the front where

correspondents could not see it.” And because of the lack of attention paid to cavalry Americans were easily swayed by “sensationally illustrated articles showing combats between aeroplanes and dirigibles, armored automobiles charging down a road, and similar things to appeal to the popular fancy, always more interested in something new and unexpected.”<sup>6</sup>

The primary threat to the cavalry’s important role of reconnaissance was the airplane. However, the performance critiques of aircraft at the beginning of the war were mixed. A British officer speaking to the *Kansas City Times* London correspondent in October 1914 recounted from field experience problems with aerial reconnaissance. He stated airplanes were unable to identify the numbers and dispositions of enemy troops in broken, wooded, hilly country. The *Times* reporter predicted the airplane would replace the cavalry but only in a reconnaissance role relegating aircraft to an “auxiliary to the cavalry” in order to save horses for battle.<sup>7</sup> Others argued cavalry reconnaissance was able to provide missing data if anti-aircraft fire was intense or inclement weather obscured the battlefield.<sup>8</sup> However, in the early stages of the war, aerial reconnaissance was still immature. Cavalry reconnaissance became less practical as a result of the immobility of trench warfare and improvements in the quality of photo reconnaissance maps.<sup>9</sup>

Despite the conclusion of most military experts that cavalry had no place in trench warfare, US cavalry officers continued to justify the cavalry’s existence. One cavalry officer argued in April 1916 why the US cavalry would have done better. First, the organization of the US cavalry was superior. European cavalry regiments had four to six

units commanded by captains versus the US regiment that consisted of twelve units organized into three four unit squadrons commanded by majors. This organization, more on the lines of an infantry regiment, was better suited for dismounted fighting and open or less dense formations in mounted attacks. In addition, the weapons European cavalry used hindered dismounted fighting. The Europeans fought with a small carbine and lance that were inferior to the American rifle and pistol--"modern fire arms instead of spears." Lastly, Europeans training emphasized shock tactics. The US conducted limited training for shock tactics and instead favored training on foot.<sup>10</sup> But in reality the French, by 1916, also gave considerable emphasis to dismounted fighting. Captain Frank Parker, an official military observer in France who visited the French cavalry school at Saumur, noted instruction in the bayonet, hand grenade, machine gun, and the understanding of field fortifications given by French instructors. French cavalymen returning from the field specifically lauded the use of the bayonet. French instructors, though, recognized the inferiority of the short carbine and bayonet acknowledging they were not as effective as the rifle and bayonet in close fighting.<sup>11</sup>

Another argument frequently voiced by cavalry officers was the need for cavalry in the event of war in the United States. Conceding that the European battlefield was not conducive for cavalry work, the United States, with it's vast territory and open countryside, was unlikely to see siege warfare and was ideal for cavalry operations.<sup>12</sup> But this is precisely why cavalry was destined for a minor role at best in Europe on the western front: there was limited room to maneuver. Arguing that the merit of cavalry

was in dismounted work justifies the importance of the infantry and offers further proof of the cavalry's demise.

Despite some optimism for the cavalry, indications from Europe--even early on--signaled the end of cavalry on the western front in its traditional role of shock and exploitation. The German Minister of War, in a document captured and then printed in the 28 November 1914 edition of the *London Morning Post* stated emphatically that cavalry charges no longer play any part in warfare and cavalymen must be able to fight exactly as infantrymen.<sup>13</sup> Almost two years later in July of 1916, the editors of the *Journal of the United States Cavalry Association* acknowledged that until the lines were broken the cavalry could do nothing. Even if mobility returned to the battlefield, it was unlikely that the US cavalry would have been available in sufficient numbers to influence the war. The quantity of merchant vessels was severely limited and the allies demanded shipping priority to infantry and machine guns.<sup>14</sup>

### Infantry

Professional reading exposed infantry officers, like cavalry officers, to new techniques in battle and results of experimentation during training exercises. Mobility and firepower, manifest in discussions on motorized transport and machine guns, were two fields that received significant attention.

With the arrival of motorized transportation, the mobility of infantry troops was now superior to the mobility of cavalry and the potential of motor transport as a force multiplier became obvious to many military observers who witnessed its performance in the Great War and trials in North America. Cavalry still maintained the advantage of few



limitations moving over challenging terrain. On the other hand, automobiles could not travel on roads that often became impassable due to bad weather.<sup>15</sup> But, the most significant disadvantage was the logistical support required by the cavalry. A cavalry division comprised over 12,000 horses for both riding and draft. These animals consumed a daily forage requirement of 276,000 pounds which in itself required more than 100 wagons to haul.<sup>16</sup> The availability of forage was a serious problem for the German during the initial advance to the Marne. The German First Army was so desperate for fodder that troops were forced to find sustenance for animals instead of resting between marches.<sup>17</sup>

Increasingly military observers espoused motor transport as the means of quickly and efficiently moving troops around the battlefield. Automobiles could transport a large number of infantry to a critical point in the line as the French demonstrated a few miles northwest of the outer fortifications of Paris to stop General von Kluck's advancing German forces. The surprise appearance of troops from Paris transported by automobiles and motor trucks helped save the Battle of the Marne for the French. In the early days of the Battle of Verdun in the summer of 1916, the arrival of 400,000 men transported by truck over a period of merely three days averted a French defeat.<sup>18</sup>

To test the utility of motorized transport of infantry, the US Army conducted trials in May 1916 and September 1916. The May exercise took place in San Antonio and involved a regiment of one thousand men loaded in 28 trucks. The trucks traveled at a rate of twelve miles in one hour and upon reaching their destination, the troops dismounted the vehicles in forty seconds, quickly spreading out into open order

formation. Cavalry could charge at that same rate but for only brief periods of time.

Arizona was the venue of the September event. Though a smaller exercise (two infantry battalions of 18 officers, 489 men), the results were as promising. During the ten-day march, the troops averaged sixty-six and a half miles per day. Actually travelling time was 84 hours at an average of eight miles per hour. Unusually heavy rains that summer hampered travel over a network of roads that were poor to start with. But although the roads became muddy, the motor trucks were still able to transport troops over rough broken country. In comparison, an expertly trained cavalry command of a similar size would have made the march in 26 days, at a rate of only 25 miles per day. Additionally, the cost savings over cavalry troops were substantial. In 1916 dollars, forage, without considering the costs of transportation or higher prices in the Arizona mountains, would have cost \$4,678.80. The actual cost of the exercise was \$641.35 including the purchase of 2,430 gallons of gasoline (gasoline cost 24 1/2 cents in 1916!).<sup>19</sup>

More important than cost was the advantage motorized transport provided commanders tactically. The first benefit was time and distance. Motorized transport delivered troops across longer distances in a shorter period allowing commanders to influence the battle quickly. Second, once they arrived at their destination there was minimal maintenance required on automobiles and trucks as compared to the care and feeding required of animals. Lastly, and most importantly, troops could be transported close to the lines and upon arrival were well-rested and ready for action.

The British advanced the concept of motorized transport when they introduced the armored motor machine gun car. These vehicles were Roll-Royce bodies with an

armored turret on top housing a Vickers machine gun. The chief benefit of the armored machine gun car was its mobility which therefore greatly reduced its vulnerability to artillery fire (except direct hits) and rifle fire. Armored motor machine gun cars were also employed in cooperation with the cavalry performing tactical reconnaissance. As expected, the most significant disadvantage, like any other vehicle, was its dependence on roads. Weather and artillery fire frequently rendered roads impassable during the Great War.<sup>20</sup>

As the war continued the character of the infantry changed so significantly that an infantry officer of 1914 would hardly recognize the organization, armament, and tactics of 1917. The French army provided the following description of the infantry's transformation in the June 1917 edition of the *Infantry Journal*. In 1914, the infantry was armed almost entirely with rifles and bayonets; machine guns were allotted two per four companies. (Before 10 May 1917, the US Army manned four machine guns per regiment.<sup>21</sup>) The French infantry of 1917 relied instead on automatic weapons (machine guns and automatic rifles) and grenades. Specifically, the infantry was organized into thirty-two grenadiers per company, sixteen rifle grenades per company, eight automatic rifles per company, eight machine guns per three companies, and one 37mm cannon per battalion.<sup>22</sup>

Another area that received considerable attention in professional journals was the firepower of machine guns. The defensive power of the machine gun was well known but, as observed during the German's March offensive, the potential lethality of the machine gun employed in the offensive became more apparent:

The first wave to cross No Man's Land consisted of about 250 men with light machine guns, almost shoulder to shoulder. A hundred yards behind came another line of 250 men, then more machine guns.<sup>23</sup>

The School of Musketry at Fort Sill realized as early as May 1917 that US machine gun doctrine was obsolete. They observed in Europe that the number of machine guns pertaining to brigade and division organizations varied from two to seven and sixteen automatic rifles per 1,000 infantrymen. Applying this ratio to US divisions yields 108 machine guns and 270 automatic rifles per division. US doctrine in 1917 prescribed 36 automatic rifles and no machine guns.<sup>24</sup>

### Field Artillery

Trench warfare dramatically changed the conduct of artillery operations and by the summer of 1917, US artillery officers could absorb numerous suggestions in the science of artillery fire from observers in Europe. Concealment and protection were important for successful artillery operations. Artillerymen concealed batteries by configuring guns in pits or surrounding batteries by trees and, if taken under fire by enemy bombardment, gun crews were able to take cover in nearby dugouts. The advantages of concealment were twofold: concealment not only inhibited identification, it also enhanced surprise. In addition, German artillery batteries utilized night movement, covered tracks, reused existing gun emplacements and avoided new emplacements, and camouflaged gun batteries in such an effective manner that their artillery was brought on line "without giving any indication of the fact."<sup>25</sup>

The frequent use of indirect fire called for reliable means of observation both on the ground and in the air. On the ground, observation of fire was made from protected

observation posts located near the first trench line. Communication between the forward observers in the observation posts and the division, battalion, and infantry commanders was critical. Therefore, an intricate network of buried telephone cables was developed. Aircraft played an increasingly important role in artillery observation and concurrently means to communicate steadily improved. Initially, aviators reported observations after landing, but when that proved unable to provide time critical information, information was provided by dropping notes from the aircraft. Subsequently a system of colored signal flares was developed. Flares were later replaced by wireless telegraphy once this technology matured and radio sets were compact enough mount in aircraft.<sup>26</sup> Wireless technology was important because it provided instant information to artillery commanders to adjust and redirect fires in order to influence the battle.

Not only did the technical aspects of artillery change, the tactical employment evolved as well. The Great War belligerents employed field artillery in three general methods: destructive fire, counter-battery fire, and barrages. Destructive fire, usually conducted by larger caliber guns, was aimed at demolishing enemy structures such as trenches, communication trenches, wiring, dugouts, and depots. German Heavy Artillery Regulations provided further guidance on the destruction of roads used by the enemy to transport supplies and ammunition. German artillery shells also rained on Allied airfields and upon villages that could possibly be used for headquarters or billeting troops.<sup>27</sup> The ability of artillery to influence the battle now extended beyond the front lines. Thus, the scope of artillery reached beyond the trenches inflicting damage on the tools the enemy used to wage war, not just the soldier at the tip of the spear.

Commanders also came to realize that destructive fire was not the only effect required from artillery to assist the infantry in securing its objectives. A German memorandum dated 6 February 1918 summarized successful measures taken by British artillery during the Battle of Cambrai the previous November concluding that "it is worthwhile to shorten the duration of the destructive fire of the artillery and to compensate for the unexecuted destruction by intense neutralization and interdiction fire with a very extensive employment of special (gas) shells."<sup>28</sup> The key to preparatory artillery fires successfully paving the way for the infantry advance was therefore not necessarily the destruction of enemy forces but as a minimum, neutralization. Additionally, since the Germans utilized existing gun emplacements in order to use previously derived firing data, fewer rounds for fire for adjustment were required resulting in more rounds for firing for effect. Likewise, counter-battery fire--fire targeted against enemy artillery--neutralized enemy artillery with gas shells instead of shells intended to destroy enemy artillery.<sup>29</sup> Using artillery to neutralize required less precision and accuracy than destruction therefore artillery batteries could function with less experienced crews manning the guns.

#### Infantry and Field Artillery Cooperation

The most important lesson learned from the European battlefield was the need for coordination and cooperation between the combat arms and on this subject numerous articles were published. Cooperation between infantry and artillery became absolutely critical with the evolution of the rolling (or creeping) barrage. A rolling barrage was a curtain of fire that progressed forward at a pre-determined rate with the infantry following

the barrage at a short distance behind. Since the artillery fire was so intense, defenders took refuge in dugouts during the bombardment instead of remaining in their trenches. This allowed infantry troops to storm into the trench before the enemy could re-man their positions. The rolling barrage was a technique common to the French, British, and Germans. In fact, the British used it with success as early as April 1916 at Arras. A translated German document on the techniques of the rolling barrage was published in the July-September 1917 edition of the *Field Artillery Journal* and a year later a July 1918 article authored by a British Officer in the *Journal of the Royal Artillery* (reprinted in the July-September 1918 edition of the *Field Artillery Journal*) detailed the procedures of rolling barrage as applied by the Germans during their March 1918 offensive. Reiterating that destructive fire was not always necessary, it specified that the objective of the rolling barrage was not to annihilate the enemy but to paralyze the enemy by forcing him to keep cover. "The rolling barrage advances by being lifted from one target and put down on a more distant one." If required, commanders could order the barrage to remain stationary in order to allow the infantry to catch up or give the infantry an opportunity to rest. Coordination was directed through flares or light flame projectors signaling the barrage to increase the speed of advance. The notes also cautioned to coordinate heavy and light artillery: "In order that short bursts may not fall among our advancing infantry, the heavy artillery will advance its barrage one minute sooner than the light artillery does." Tight command and control also allowed the barrage some flexibility to fire against targets of opportunity. For example, if an enemy machine gun nest was still active commanders could shift some assets involved with the rolling barrage over to the machine gun nest.

This was important particularly to the Germans who prohibited infantry from following the barrage into active machine guns.<sup>30</sup>

Cooperation between infantry and artillery commanders was critical not just because of the close proximity of infantry to friendly artillery fire but also since the infantry had a better view of the battle and could serve as the eyes of the artillery. To effectively assist the infantry, artillery fire must be placed at designated times and locations. However, greater firing range meant artillery commanders did not always see enemy infantry, artillery and movements of firing lines and the interference of enemy artillery fire further clouded his situational awareness. With their eyes directly on the battle, the infantry could direct artillery fire where needed. The greatest challenge to cooperation was communication. Telephone wires were often cut, signaling was difficult, and messengers were popular targets. As the Major General who authored the memorandum stated, "(Artillery) liaison with the attacking infantry can never be too close."<sup>31</sup>

### Armor

The French and British separately developed tanks as a revolutionary weapon they hoped would end the stalemate on the western front. American tractors already in use logging in Oregon provided the inspiration for these machines. Norman Leads, the treasurer for Automatic Machine Company of Bridgeport, Connecticut, the firm that built tractors used in the Pacific northwest, conceived the idea of a tractor-like weapon able to cross trenches, overrun wire, and traverse shell-pitted ground.



Reports on the use of tanks were sent to the War College Division of the General Staff in the fall of 1916 from observers in France and Britain. The first tanks employed only machine guns but later models evolved outfitted with heavier weapons. Unfortunately, tanks were mechanically unreliable, vulnerable to artillery fire, and inflicted "hardship and suffering" on their crews. One observer, unimpressed with their effect on the battlefield, stated that the "military value of the tank has been greatly overrated in the public press" though tanks had a redeeming value of providing a pronounced "morale effect" on advancing infantry. Regardless, in January 1917, Brigadier General William Crozier, Chief of Ordnance, directed the military observer at the American Embassy in London, Major L. T. Hillman, to inquire into procuring a tank for the US Army. Further liaison with the British convinced US observers that the tank was the key to future warfare. The British Tank Headquarters provided the Americans strong advice: "If [the US] expected to fight in Europe [the US] would have to have Tanks." On 19 September 1917 the American Embassy in London cabled Washington saying a tank was on its way to the US.<sup>32</sup>

### Aviation

The War College Division received information pertaining to the use of airplanes in World War I as early as October 1914. The military attaché in France, Major Spencer Cosby, reported on the important services rendered by airplanes in reconnaissance work and bombing. He went on to note French claims that they successfully shot down German airplanes "with machine guns mounted on French aeroplanes sent out in pursuit."<sup>33</sup> The French firmly believed that the best way to down enemy airplanes was

with another plane due to limited success achieved by artillery and rifle fire. Major Cosby also included in his report detailed procedures for the observation of artillery fire.<sup>34</sup> Another military observer in France, Captain N. E. Margetts, echoed Major Cosby's findings in a report he submitted in July of 1915. According to Captain Margetts, aircraft must perform individual missions: reconnaissance and fighter, observation of artillery fire, and bombing. Most importantly, he recognized the importance of cooperation between aviation and the other branches of the Army. He succinctly stated

The present war has so demonstrated the vast importance of intimate relations between the aeroplane and the gun, that one is almost inclined to believe that with a strong artillery, of various calibres, well-trained and efficient Aerial service, the task of the infantry would be reduced one half.<sup>35</sup>

The astute observation by these two observers served the War College Division well by providing clear insight into the developments and importance of warfare in the air.

### Doctrinal Publications

If an Army officer only read professional journals of the time, he could summarize that cavalry does not play an important role in siege warfare, motor transport had significant tactical advantages, machine guns were highly effective, aircraft played an increasingly important role, and the rolling barrage proved successful supporting advancing infantry. But the War Department had its own vision for fighting a modern war which was delineated in its doctrinal publications.

How did the Army's doctrinal publications address these issues? The *Field Service Regulations (FSR)* published in 1918 devoted significant attention to the

traditional employment of cavalry--“by using the cavalry as a mass to engage and defeat the enemy’s cavalry.”<sup>36</sup> This is not surprising since many officers considered cavalry operations appropriate for potential conflict in the United States. Cavalry was still considered the branch of choice for reconnaissance. “Reconnaissance in the theater of operation is best made by the cavalry”<sup>37</sup> according to the *FSR*. The *FSR* also supported reconnaissance by aero squadrons “to discover turning and enveloping movements, the position and strength of the enemy’s reserve, artillery positions and movement of cavalry”<sup>38</sup> in addition to identifying key terrain features and the movement of combat or field trains in the enemy’s rear. Movement in the rear was important to commanders because it could indicate the reinforcement of weak or strong points or even retreat. The *FSR* briefly hinted at a counter-air mission by the statement that airplanes could be used to “prevent hostile aerial reconnaissance” though no further discussion of offensive operations was warranted.<sup>39</sup> Despite the preference for cavalry, aircraft possessed advantages over cavalry. Aircraft clearly had the edge in speed, surveillance radius, and the ability look deep into the enemy’s rear. Remarkably, despite the advances in aircraft technology and recommendations by observers the *FSR* and the *Drill Regulations for Signal Troops (DRST)* (aircraft were assigned to the Signal Corps) did not address offensive employment of aircraft in a fighter, pursuit, or bomber role.

Another noteworthy omission was the use of motor transport. Though the advantages of increased mobility and decreased support were documented by exercises conducted by the US Army and experience in Mexico during the Punitive Expedition, the *FSR*, *Infantry Drill Regulations (IDR)*, and the *Drill and Service Regulations for Field*

*Artillery (DSRFA)* did not mention the tactical employment of motor transport. In fact, the majority of information contained in the *FSR*, *IDR*, and *DSRFA* concerned procedures for the drilling and handling horses. Only the *DRST* mentioned motor vehicles but the discussion was limited to instruction on its care and operation.

The *FSR* and *IDR* did not sufficiently discern the employment of the machine gun. The Army was concerned that counter fire from enemy artillery made machine guns too vulnerable. Accordingly, machine guns were therefore best employed for short periods to gain the element of surprise. The *IDR* further stipulated that machine guns should not commence fire until the infantry attack was under way and that machine guns should not be assigned to the firing line so that "fire directed against (machine guns) is not likely to fall upon the firing line."<sup>40</sup> This is contrary to the favorable employment of machine guns by the German in late 1917 and during the offensive of March 1918.

Organizationally, in 1918, the proportion of machine guns in a US division was on par with the European armies. A typical German division fielded 144 automatic rifles and 54-108 machine guns; the French 216 automatic rifles and 72-108 machine guns; the British 193 automatic rifles and 64 machine guns. The US division employed 768 automatic rifles and 260 machine guns but it is important to note that the US division was more than twice the size of a European division.<sup>41</sup>

In accordance with the *DSRFA* published in 1916, the artillery attack was carried out in three phases: preparation, decisive action, securing for victory. Preparatory fires were tasked to fire against the enemy's force opposing the advance of infantry until the infantry progressed within small arms fire. At that point, artillery fire shifted to enemy

infantry. The *DSRFA* called for the artillery batteries to be flexible by shifting missions from breaching, against infantry, or counter-battery fire as required.<sup>42</sup> The *DSRFA* did not differentiate between destructive or neutralizing fire.

During the decisive action phase, the intent of the artillery was to continue counter-battery fire with the minimum resources required and commence fire against the objective of the infantry. The *DSRFA* cautioned against moving all artillery batteries, reasoning that opportunities for an enemy to strike against advancing infantry were provided during the periods of inactivity while moving.<sup>43</sup>

Only on a limited scale did Army doctrinal publications advocate the cooperation of the combined arms. Nevertheless, this cooperation primarily focused on infantry and artillery and did not include aviation. As endorsed by the *Field Artillery Journal* articles, the *FSR* mandated that infantry commanders must advise the artillery commander of his intentions and keep the artillery commander apprised of the conduct of battle and support as required. The *IDR* concurred with the *DSRFA* in the use of artillery in the support of infantry. From the infantryman's point of view, artillery "keeps down the fire of hostile artillery and seeks to neutralize the hostile infantry by inflicting losses upon it, destroying its morale, driving it to cover, and preventing it from using its weapons."<sup>44</sup> The *FSR* further declared infantry as the principal and most important combat arm and artillery as the close supporting arm by helping the infantry maintain fire superiority. War Department Document No. 583, "Instructions on the Offensive Conduct of Small Units," (a translated French document distributed by the War Department in May 1917 and the American Expeditionary Force in August 1917) stated "recent developments confirmed

the power of the machine gun and the inability of infantry forces to capture or break through modern entrenchments unless heavily supported by massive artillery fire.”<sup>45</sup>

Both the *IDR* and *DSRFA* describe the advance of artillery fire in front of the infantry but not in such detail as to describe a cooperative “rolling barrage.” The *DSRFA* stated:

As our attacking Infantry commander reaches the danger zone of our Artillery the commander of the Infantry firing line should, by preconcerted signal--such as the display at the firing line of a conspicuous and suitable flag--inform the Artillery commander of the fact. The Artillery then increases its range so as to impede the movement forward of possible reserves, and to take the enemy in rear in case he retreats.<sup>46</sup>

According to the *IDR*,

Troops should be accustomed to being fired over by friendly artillery and impressed with the fact that the artillery should continue firing upon the enemy until the last possible moment. The few casualties resulting from shrapnel bursting short are trifling compared with those that would result from the increased effectiveness of the enemy’s infantry fire were the friendly artillery to cease firing. Casualties inflicted by supporting artillery are not probable until the opposing infantry lines are less than 200 yards apart.<sup>47</sup>

These paragraphs do not articulate the detailed, precise coordination required for the simultaneous advance of infantry and artillery fire as indicated by the experiences of the Germans, British, and French.

In developing doctrine for the war the War Department took relatively little initiative deferring instead to the European armies. The US Army War College reprinted and edited Allied literature, such as the French Army’s “Manual for Infantry Platoon Commanders” (1917) and the British Army’s “Notes for Infantry Officers on Trench Warfare.” The War Department published a series of pamphlets that included combat

experience of allies and enemies. These pamphlets, published in 1917 and titled "Notes on Recent Operations" (not to be confused with the pamphlets published by the AEF in 1918 under the same name), lacked an American critique and served merely as a conveyor of information. The "Notes" were not promulgated as doctrine but merely "for the information of all concerned."<sup>48</sup>

"Lafayette nous sommes ici"<sup>49</sup>

Significant differences existed between what occurred on the battlefields of Europe and the guidance provided to the American Expeditionary Force (AEF) by the War Department through its various regulations. Given forces to command, General Pershing had to decide how best to deploy his troops. General Pershing anticipated receiving doctrine from the War Department but instead the War Department looked to General Pershing for recommendations. General Pershing believed that "the rifle and bayonet remain the supreme weapons of the infantry soldier and . . . the ultimate success of the Army depends upon their proper use in open warfare."<sup>50</sup> Similarly, in a report submitted in July 1918 by the AEF Chief of Training, Colonel H. B. Fiske, commented on the French infantry concluding that "The French do not like the rifle, do not know how to use it, and their infantry is consequently too dependent upon powerful artillery support."<sup>51</sup> How then did the AEF plan its operations?

The Meuse-Argonne offensive was not the first time Americans engaged in combat in the Great War but it was the first sustained, large-scale multi-corps operation under the command of General Pershing. American fighting men received their first taste of battle six months after the declaration of war. By October 1917 the 1st Division

completed preliminary training and in an effort to indoctrinate US forces to battle, Sommerville, a sector ten miles to the east of Nancy, was selected as the location of the first infantry regiment rotations. One battalion from each of the four infantry regiments relieved alternate French battalions. The American battalions, however, were under command of the French regiments holding the sector.<sup>52</sup> By March the 26th Division, 42nd Division, and the 2nd Division joined the 1st Division as the first four American divisions to complete their final front line training.<sup>53</sup>

American forces were provided to Marshal Foch, Command-in-Chief of the Allied Armies in France, in an effort to bolster the Allied forces defending against the German offensive of March 1918. On 25 April 1918 the 1st Division relieved the French at Catigny which the Americans captured a month later on 28 May 1918. US troops continued to fight at division strength throughout the summer at Château-Thierry, Belleau Wood, the Marne, and the Champagne plateau. But it was not until August 1918 when the First American Army was formed for the St. Mihiel offensive that General Pershing exercised tactical command.<sup>54</sup> The St. Mihiel offensive began on 12 September 1918 with General Pershing commanding both American and French Corps--a composite of three American Corps (I, IV, and V) and one French Corps (2nd). The order of battle in the Meuse-Argonne sector consisted of the American I, III, and V Corps, all under General Pershing's command.<sup>55</sup>

By the morning of 26 September 1918 US forces were in place. The three corps were oriented north, the I, V, and III Corps west to east, tucked in a twenty-five mile front bounded by the Argonne Forest to the west and the Meuse River to the east. To the



west of the 1st Corps was the French XXXVIII Corps and to east of the Meuse River was the French XVII Corps. It is important to note that to plan the Meuse-Argonne operation as it unfolded required the French to provide the Americans the majority of men and materiel in artillery, tanks, and aircraft.

A central theme of the plan of attack was the employment of the combined arms. The First Army's Field Order 20, which delineated the initial plan of attack, outlined in detail the coordination of artillery, gas, tanks, and the air service. The mission of the artillery was to prepare the attack of the infantry by destroying or neutralizing enemy forces by a short preliminary bombardment prior to H hour, 0530. An artillery bombardment conducting harassing and prohibiting fire from the adjacent French Fourth Army and French XVII Corps commenced at H hour minus 6 hours followed 3 hours later by artillery from the American I, V, and III Corps. The order designated that fifteen minutes into the preparatory fire army, corps, and divisional artillery were to shift fires to hostile cantonments, headquarters, and telephone exchanges. In addition to high explosive shells, toxic gas shells (excluding mustard gas) were also to be employed.<sup>56</sup> To support the infantry advance, the plan called upon artillery to conduct a rolling barrage. Specifically, the attack plan established a rolling barrage between the I, V, and III Corps at a rate of 100 yards in four minutes.<sup>57</sup>

Unlike Cambrai the previous November, the mission of the tanks assigned in the Meuse-Argonne sector was not initial penetration. Tanks were instructed to follow the infantry only after the infantry rendered the Hindenburg Line passable. Once the line was broken, tanks would proceed to destroy machine-gun nests, strong points, and exploit

success. Because of the limited quantity, tanks consequently were not assigned in sector over the entire Hindenburg Line. Only two of the three corps received an allotment of tanks; III Corps, alongside the Meuse River did not receive any. Assigned to the V corps were the 505th Regiment (three battalions) and two French groups (12 tanks each) operating in the sectors of the right and center divisions; the left division received the 504th Regiment (two battalions) and one group of French tanks. To the west the Field Order apportioned I Corps the American 1st Brigade (two light battalions) with the French Group Schneider attached to operate with the right division. The distribution of tanks over the nine divisions, west to east, were two without, four with, and three without.<sup>58</sup>

Army aviation, as with tanks not thoroughly incorporated in Army doctrinal publications, received significant attention in *Field Order 20*. The employment of aircraft, as detailed in Annex Number 4 and Appendix 3, was an ambitious plan in four phases: preparation until the day of attack, during the artillery preparation, during the attack, and for exploitation. Preparatory air strikes targeted objectives in order to hinder the movement of troops and supplies in the rear and at strategic targets including airdromes and railroad centers. Less experienced American flyers were restricted to day bombing while French aviators conducted night bombing missions. The Air Service selected similar targets for strikes during the artillery preparation and attack phases again with Americans in the air during the day and the French at night. Additional air strikes were allotted to exploit the progress of ground troops as the situation warranted. This

was a robust and vigorous plan for an air service that had merely fifty-five training aircraft almost eighteen months earlier.<sup>59</sup>

General Pershing, a cavalryman himself, did not desire to abandon mounted troops. Believing that an opportunity to exploit success with mounted troops was at hand, Field Order 23 also called for the assignment of the 5th Cavalry Division to I Corps to “exploit the success by driving deep into the enemy’s territory” once a rupture of the enemy’s defensive positions were made.<sup>60</sup> Erroneously, the cavalry’s nemesis, motor transport, was not tasked to fulfill its offensive potential. Instead of transporting fresh troops when and where required to influence the battle, trucks and automobiles were committed primarily to move supplies.

#### Summary

General Pershing had the daunting task of melding men and machines into a cohesive fighting force in a little over twelve months. Nevertheless, the Army was not in a vacuum and information on the conduct of the war was available to the well-read officer. From these documents one could acquire a sense for the course of the war and which weapons and tactics dominated the battlefield. The professional service journals regularly featured articles on the progress of the war by US observers, Allied officers, and captured and translated enemy reports. The editors of the *Infantry Journal* recognized the importance of this feedback writing:

One of the most valuable functions of these journals is that they are mediums for the exchange of experience. . . . The *Infantry Journal* could well serve as a medium for exchange and comparison of methods. . . . A short description of the method found advantageous will be quite enough, and if such material is sent to the *Journal* it can be combined with similar matter in such a way as to help others who, after all, are working for the same ends under the same limitations.<sup>61</sup>

Professional journals and the reports of military observers documented the value and effectiveness of motor transport, machine guns, and the rolling artillery barrage. Not as well documented in the American journals were the important roles of tanks and aviation in British and French success; however, these combat systems received considerable attention from military attaches and they did provide ample information on their development and effective use. Notwithstanding, the methods to employ a force of combined arms in modern war were woefully inadequate in War Department documents.

How did General Pershing plan to employ his forces? His plan of attack for the Meuse-Argonne operation departed from War Department doctrine and called for combined combat arms. Aviation, tanks, rolling artillery barrages, and motorized transport were to support the infantry in moving the Germans back towards their homeland. But most importantly, the War Department did not recognize in their publications the changes that transpired in Europe. Given this tactical void, General Pershing clearly had to go further than the journals and doctrinal publications available and adapted the tactics of the Allies in the hope of achieving victory.

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<sup>1</sup>Lieutenant Elbert E. Farman, Jr., "The Cavalry in the Present War," *Journal of the United States Cavalry Association* Vol. XXVI no. 110, (April 1916), 630-43.

<sup>2</sup>Lieutenant Colonel John Stuart Barrows, "The Uhlans and Other Cavalry in the European War," *Journal of the United States Cavalry Association* Vol. XXVI no. 109, (January 1916), 394.

<sup>3</sup>"Cavalry has 'Come Back'" see Editors Table, *Journal of the United States Cavalry Association* Vol. XXVI no. 108, (October 1915), 330.

<sup>4</sup>Captain De Sezille, French Army, "Practical Advice to Cavalry Organizations," *Journal of the United States Cavalry Association* Vol. XXVI no. 108, (October 1915), 263.

<sup>5</sup>Editorial from the *Washington Times*, "The Cavalry Overlooked," *Journal of the United States Cavalry Association* Vol. XXVI no. 109, (January 1916), 475.

<sup>6</sup>Farman, 625.

<sup>7</sup>"Aircraft in War," see Editors Table, *Journal of the United States Cavalry Association* Vol. XXV no. 104, (October 1914), 369-70.

<sup>8</sup>Captain Hamilton S. Hawkins, "Cavalry," *Journal of the United States Cavalry Association* Vol. XXVI no. 110, (April 1916), 601.

<sup>9</sup>"Information on Trench Warfare," see Military Notes, *Journal of the United States Cavalry Association* Vol. XXVII no. 111, (July 1916), 18.

<sup>10</sup>Hawkins, 587-88.

<sup>11</sup>Captain E. D. Scott, Memorandum on Field Artillery, Army Service Schools, Reproduced at the National Archives, Washington DC, file 3710-1, War Department, War College Division.

<sup>12</sup>Hawkins, 154-55.

<sup>13</sup>"New German Training--Learning by Experience," see Editors Table, *Journal of the United States Cavalry Association* Vol. XXV no. 105, (January 1915), 556-58.

<sup>14</sup>"Dismounted Cavalry," see Editor's Table, *Journal of the United States Cavalry Association* Vol. XXVIII no. 115, (July 1917), 154-55.

<sup>15</sup>Captain Henry J. Reilly, "Cavalry in the Great War," *Journal of the United States Cavalry Association* Vol. XXVII no. 114, (April 1917), 482.

<sup>16</sup>"Matériel for Field Service," see Editorial Department, *Infantry Journal* Vol. XIII no. 1, (Jul-Aug 1916), 81.

<sup>17</sup>Larry H. Addington, *The Patterns of War Since the Eighteenth Century* (Bloomington and Indianapolis: Indiana University Press, 1984), 138.

<sup>18</sup>"The Auto Infantry," see Varied Ground, *Infantry Journal* Vol. XIII no. 1, (Jul-Aug 1916), 59; "Matériel for Field Service," see Editorial Department, *Infantry Journal* Vol. XIII no. 1, (Jul-Aug 1916), 82.

<sup>19</sup>*Ibid.*, 333-37.

<sup>20</sup>Captain John G. Quekemeyer, "Armored Motor Machine Gun Battery with Cavalry Division," Reproduced at the National Archives, Washington DC, file 8959-18, War Department, War College Division.

<sup>21</sup>John B. Wilson, *Maneuver and Firepower: The Evolution of Divisions and Separate Brigades* (Washington: United States Army Center of Military History, 1998), 48.

<sup>22</sup>From Authoritative Sources "Organization on the Infantry Battalion -- New Armament and Tactics," *Infantry Journal* Vol. XIII no. 9, (June 1917), 787.

<sup>23</sup>Colonel H. A. Bethell, C.M.G., R.F.A., "The Modern Attack on an Entrenched Position," *Journal of the Royal Artillery* Vol. XLV no.4, (July 1918), 125.

<sup>24</sup>Study by School of Musketry, Fort Sill, "Foreign Machine-Gun Doctrine," *Infantry Journal* Vol. XIII no. 8, (May 1917), 757.

<sup>25</sup>"Measures Taken by the German Artillery to Carry Out Preparations for Attack Without Betraying the Intentions of the Command," *Field Artillery Journal* Vol. VIII no. 4, (Oct-Dec 1918), 505; 2d Lieutenant Norman P. Morrow, "The Employment of Artillery in the Balkan and the Present European War," *Field Artillery Journal* Vol. V no. 2, (Apr-Jun 1915), 327,336.

<sup>26</sup>Major M. E. Locke "Artillery in Europe," *Field Artillery Journal* Vol. VII no. 3, (Jul-Sep 1917), 296; "European Field Artillery Materiel and Developments of the Present War," *Field Artillery Journal* Vol. V no. 1, (Jan-Mar 1915), 38; Captain Oliver L. Spaulding, Jr., "Infantry Under Artillery Fire," *Field Artillery Journal* Vol. XI no.5, (Mar-Apr 1915), 641-650.

<sup>27</sup>Locke, 326-27.

<sup>28</sup>"Measures Taken by the German Artillery to Carry Out Preparations for Attack Without Betraying the Intentions of the Command," *Field Artillery Journal* Vol. VIII no. 4, (Oct-Dec 1918), 504.

<sup>29</sup>*Ibid.*, 506.

<sup>30</sup>Translation of a German Document, "Organization of a Rolling Barrage in the German Army," *Field Artillery Journal* Vol. VIII no. 3, (Jul-Sep 1918), 417-20; Colonel H. A. Bethell, C.M.G., R.F.A., "The Modern Attack on an Entrenched Position," *Journal of the Royal Artillery* Vol. XLV no.4, (July 1918), 121-129.

<sup>31</sup>*Ibid.*, 421.

<sup>32</sup>Captain W. A. Castle, "The New Heavy Armored Motor Cars," Reproduced at the National Archives, Washington DC, file 8959-3, War Department, War College Division; "Tanks," Reproduced at the National Archives, Washington DC, file 8959-16, War Department, War College Division; "Tanks," Reproduced at the National Archives, Washington DC, file 8959-19, War Department, War College Division; Cablegram, Reproduced at the National Archives, Washington DC, file 8959-26, War Department, War College Division.

<sup>33</sup>Major Spencer Cosby, "Use of Aeroplanes in the War," Reproduced at the National Archives, Washington DC, file 5770-97, War Department, War College Division.

<sup>34</sup>*Ibid.*

<sup>35</sup>Captain N. E. Margetts, "Aviation and its Employment in Modern Warfare," Reproduced at the National Archives, Washington DC, file 5770-100, War Department, War College Division.

<sup>36</sup>US Department of the Army, *Field Service Regulations*, (Washington: Government Printing Office, 1917) 69.

<sup>37</sup>*Ibid.*, 13.

<sup>38</sup>*Ibid.*, 20.

<sup>39</sup>*Ibid.*, 19-20.

<sup>40</sup>*Ibid.*, 127.

<sup>41</sup>Jonathan M. House, *Toward Combined Arms Warfare: A Survey of 20th Century Tactics, Doctrine, and Organization* (Fort Leavenworth KS: US Army Command and General Staff College, 1984), 40.

<sup>42</sup>US Department of the Army, *Drill and Service Regulations for Field Artillery*, Vol. 4, (Washington: Government Printing Office, 1916), 99-100.

<sup>43</sup>*Ibid.*, 101.

<sup>44</sup>Ibid., 108.

<sup>45</sup>James W. Rainey, "Training the American Expeditionary Forces in World War I." M.A. thesis, (Temple University, 1918), 5-6.

<sup>46</sup>US Department of the Army, *Drill and Service Regulations for Field Artillery*, Vol. 4, (Washington: Government Printing Office, 1916), 101.

<sup>47</sup>US Department of the Army, *Infantry Drill Regulations*, (Washington: Government Printing Office, 1917), 108-09.

<sup>48</sup>Dennis Vetock, *Lessons Learned: A History of US Army Lesson Learning* (Carlisle Barracks, PA: US Army Military History Institute, 1988), 41.

<sup>49</sup>General Pershing is often given credit for saying "Lafayette, we are here," during ceremonies at Lafayette's tomb on 4 July 1917. These famous words, however, were spoken by a quartermaster officer, C. E. Stanton.

<sup>50</sup>US Department of the Army. Historical Division, *The United States Army in the World War, 1917-1919*, (Washington: Government Printing Office, 1948) Vol. 14, 316. Cable 228-S, 19 October 1917.

<sup>51</sup>Paul F. Braim, *The Test of Battle* (Newark: University of Delaware Press, 1987), 49.

<sup>52</sup>Thomas, Shipley, *The History of the A.E.F.* (New York: George H. Doran Company, 1920), 51.

<sup>53</sup>Thomas, 60-64.

<sup>54</sup>Thomas, 72.

<sup>55</sup>Thomas, 209, 239.

<sup>56</sup>US Department of the Army. Historical Division, *United States Army in the World War, 1917-1919* Vol. 9 (Washington: Government Printing Office, 1948), 96, 126-27.

<sup>57</sup>Ibid., 87.

<sup>58</sup>Ibid., 97-99.



<sup>59</sup>Ibid., 99-102.

<sup>60</sup>Ibid., 126.

<sup>61</sup>"A Trade Journal," see Editorial Department, *Infantry Journal* Vol. XIV no. 4, October 1917, 300-01.

## CHAPTER 5

### THE FIRST ARMY IN BATTLE

As the summer of 1918 turned into fall, the Allied commanders sensed the time was right to launch the final decisive action against the Central Powers. The American Expeditionary Force (AEF) was anxious to get into the fray although AEF leaders believed US troops would not be ready until 1919. Marshal Foch was eager to oblige and assigned the Americans a sector of difficult terrain. The last major offensive started in late September 1918 and continued until combat operations ceased on 11 November 1918 when the warring nations signed an Armistice. How well did the 1st Army execute its mission? General Pershing, with almost no guidance from the War Department in Washington, bore sole responsibility for shaping the AEF. In light of the enemy's capitulation, there were notable faults in battlefield performance. Some were a result of flaws in General Pershing's guidance; others were beyond his control. For the most part, the 1st Army, fighting with elan and fortitude, learned combat lessons the hard way: through battlefield experience.

#### The Strategic Plan September 1918

The steady influx of American manpower coupled with the Allied and American battlefield success in the summer of 1918 provided an opportune time to conduct a large scale offensive in September 1918. By this stage in the war Marshal Foch recognized that by attacking on a limited front a decisive war-winning breakthrough was unlikely because the defense could bring up its reserves faster by rail or motor transport than attacking troops could advance on foot. Because exhausted advancing troops met fresh

reserves, attackers were unable to exploit their initial success and a salient developed. Marshal Foch decided on a strategy entailing a series of offensives applying pressure at all points simultaneously so that the Germans would be compelled to deploy their reserves in a stopgap fashion, responding to meet the defenders immediate requirements. He hoped that before long all the enemy's reserves would be deployed.<sup>1</sup>

Marshal Foch designed the plan to cut the German lines of communication between France and Germany thus forcing the entire German Army to be captured unless they withdrew. The plan specified four attacks on four successive days:

September 26: The French 4th Army and the American 1st Army were to attack northward between Reims and Verdun toward the railroad centers of Mézières and Sedan in order to close the central entrance to France.

September 27: A drive by the British 1st and 3rd Armies through Cambrai towards Valenciennes, Mons, and Liège thereby closing the northern entrance to France.

September 28: An attack by the allied forces under the command of the Belgian King between the sea and the Lys River to further close the northern entrance to France.

September 29: A drive by the British 4th Army, supported by the French 1st Army, in the center of the Allied line near St Quentin.

The role of the American 1st Army was to act as the right pivot of the Allied drive on the Germans entrenched on the Hindenburg line. Marshal Foch provided specific direction to the initial French-American attack by assigning the Americans the area between the Meuse River and Argonne Forest and the French 4th Army the area between the Aisne River and the Suippe River. The intent of the US Meuse-Argonne operation



was to support the attack of the French 4th Army by drawing German reserves east. A successful attack along the Meuse River would therefore divide the German armies<sup>2</sup>

The Mézières-Sedan railroad lines were vital to German operations. One-third of German evacuation and supply facilities from Verdun to Holland and two-thirds of these facilities from Verdun to the Sambre River were dependent upon these railroad lines which moved up to 250 trains a day. The railway ran from Metz northwest to Mézières-Sedan roughly paralleling the line of battle. This rail line provided communication between German troops on both sides of the Meuse River and allowed the Germans to rapidly shift troops to different sectors. In the vicinity of Sedan the rail lines were only 35 miles from the front providing the Germans a means of quickly transporting reinforcements.

The initial strategic plan for the American 1st Army was to drive east toward another critical railhead, Metz, but Metz was probably too strongly fortified to be taken by inexperienced soldiers. Lorraine, the region east of the Argonne Forest where American forces were stationed, did nonetheless have advantages for the US. Troops and supplies were routed through ports on the Atlantic coast of France freeing up the northern English Channel ports and decreasing the potential of exposure from a German advance. Lorraine was also less crowded and allowed more room to house and train soldiers. Moreover, it was strategically important. An advance to the east would bring the war directly into German territory and threaten the coal mines of the Saar and iron mines of Longwy-Briey that provided about half the raw materials needed for the production of German munitions.<sup>3</sup>

### The Challenges of the Meuse River and Argonne Forest

The terrain between the Meuse River to the east and the Argonne Forest to the west would have been difficult to seize for seasoned troops let alone the less experienced Americans. The heights east of the Meuse River provided a barrier to movement east and furnished sites over the eastern half of the sector to observe and cover by artillery fire. West of the Meuse River is a valley intersected by east-west parallel ridges and ravines with the opposite side of the valley leading up to Montfaucon. Montfaucon, a commanding hill in the center of the sector, was strengthened by the Germans with elaborate field fortifications. This formidable obstacle rising over 1,000 feet high proved too difficult to overcome by French troops during unsuccessful attacks in 1914 and 1915. Heading west toward the Argonne Forest, a heavily wooded plateau, is a narrow five-mile wide valley dominated by the buttes of Montfaucon and Vauquois Hill.<sup>4</sup>

For three years, the Germans constructed defense lines on the east and west ridges between the Meuse River and Argonne Forest with a maze of barbed wire entanglements, trenches, concrete machine gun emplacements and prepared artillery positions. These defensive positions were developed to provide mutual support to lay fire against troops advancing in a north-south direction. The German layered their defense in depth with three main belts that ran parallel to the initial battle lines. Etzel-Giselher Stellung, the first belt, was situated three miles from the initial battle lines and ran through Montfaucon. Four miles north of Montfaucon, Kriemhilde Stellung, the second belt and primary defensive position, was built with a series of concrete and bunkered emplacements. The third belt, Freya Stellung was lightly manned and was located five

miles north of Kriemhilde Stellung through the Romagne Heights. All three belts, making up part of the famous Hindenburg Line, continued east and west of the US sector from Metz to the North Sea and was the longest and strongest of four defensive systems constructed by the Germans in France. The narrow front and natural defile of the terrain combined with the depth of German defenses limited avenues of advance. The only feasible approach of advance was to drive salients into the enemy defenses by frontal assaults and then exploit these salients by attacking the flanks of the penetrations just created. General Harbord described it as "probably the most comprehensive system of leisurely prepared defense known to history."<sup>5</sup>

In the trenches opposing the American 1st Army were elements of the German Fifth Army operating under the command of German Army Group "von Gallwitz." Between the Meuse River and Argonne Forest, five divisions defended this well-fortified area; however, these divisions were only at one-third authorized strength. AEF Intelligence estimated that these defenders could be reinforced with four divisions the first day, two the second, and nine the third. But the quality of the German troops was poor, consisting of a large number of Saxons and Austro-Hungarians whose loyalty to the German cause was in question.

However, the Americans were far from fielding a well-oiled war machine. Only four of the divisions had any front line combat experience and over half the soldiers were new conscripts. Some soldiers were so "green" that they had yet the opportunity to fire their rifles. But the US 1st Army not only outnumbered the dispirited German forces by a margin of four to one, they possessed overwhelming superiority in artillery, aircraft, and

tanks, all supplied by the Allies. In fact the Germans did not have any tanks available in their defense. American success would depend largely on sheer numbers. Thus as the offensive kicked off nine US divisions, each twice the strength of the typical European army division, went over the top to face five grossly undermanned German divisions manning terrain best suited for the defense.<sup>6</sup>

### Over the Top

The Meuse-Argonne Offensive was executed in three phases: Phase I ran from the initial jump-off day, 26 September 1918, until 3 October 1918; Phase II from 4 October 1918 through 30 October 1918; and Phase III 1 November 1918 until the Armistice, 11 November 1918. General Pershing's plan of attack anticipated progressing ten miles from the jump-off line taking Montfaucon and proceeding to the Romagne Heights on the first day. The Americans jumped off at 0530 in heavy fog after a short six-hour artillery bombardment to retain the element of surprise, 100 meters behind a rolling barrage. Initial progress reports were positive and encouraging. However, it did not take long for the inexperienced troops to develop problems. Soldiers grouped together making easy targets for enemy machine guns that mowed down entire platoons in one sweep. Divisional artillery was ineffective, firing blindly without direct observation. Tanks failed to progress forward at an adequate rate and soldiers, recognizing that tanks were an easy target, refused to accompany them hence tanks were easy prey for the Germans who systematically disabled them. Compounding the problems in execution, communication was extremely poor due to a combination of incomplete, conflicting reports and a breakdown in the means of transmission, most





notably, cut phone wires. By nightfall the Americans, in the words of Colonel George C. Marshall, Jr., "disorganized and confused to a remarkable degree," were stopped at a point centered on Montfaucon, well short of their ten mile goal.<sup>7</sup>

The attack resumed the next day with similar results. The rolling barrage advanced too quickly allowing the Germans to remain in their entrenched positions until the barrage passed and then rise to cut down the bunched up attackers. German artillery positioned on the heights of the Meuse River on the right and on the foothills of the Argonne Forest on the left poured fire down on the Americans with devastating results. For several days, the advance only inched forward and from 30 September 1918 until 4 October 1918 the 1st Army paused to restore communication, untangle a snarled supply organization, and regain control of all forces. Montfaucon was taken on the second day but the delay in taking Montfaucon proved advantageous for the Germans. It allowed six fresh divisions with five more nearby to be brought forward to counter further attacks.<sup>8</sup>

Phase II commenced on 4 October 1918 at 0500 with the same objective as Phase I: to penetrate the second layer of defense, the formidable Kriemhilde Stellung. The Americans did not fire a preliminary artillery barrage in order to maintain an element of surprise; nevertheless the German defenders were ready. Again, uncoordinated and disorganized infantrymen were methodically cut down. On 14 October 1918, new corps commanders led a new wave of assaults with similar results but this time under the protection of an intense artillery barrage. By that evening it was evident that the attack had failed; two new divisions barely advanced forward. The 1st Army had advanced twelve miles in Phase I but in the first three weeks of October it advanced a mere three

miles with heavy losses. But over the next two days the 1st Army, specifically III Corps, captured key positions in the Kriemhilde Stellung. The 32nd Division captured Côte Dame Marie and on 16 October 1918 the 42nd Division took Côte de Châtillon. Little success was achieved for the rest of the month, for when Phase II closed the Germans still held the last line of trenches in the Kriemhilde Stellung. Regardless, the Germans showed no sign of imminent collapse. The last ten days of the month were spent reinforcing artillery and moving fresh divisions to the front for the final push forward. This was an extremely difficult time for General Pershing. With the British making significant gains in the north, he knew he must continue the offensive, having committed the 1st Army to uphold not only the reputation of the army but the nation.<sup>9</sup>

The attack continued 1 November 1918 with a 1st Army re-tooled and better prepared to take fortified positions. Phase III commenced with III Corps, V Corps, and I Corps aligned east to west ready to continue the advance. Supporting artillery was scheduled to isolate hills under attack by interdiction fires on rear slopes and counter-battery was programmed against enemy artillery and reserve positions. The extensive use of gas was also planned. But this time the 1st Army's artillery had been moved closer to the lines and for two hours pummeled German batteries, reserves, headquarters, crossroads, and bridges. German defenses and morale were devastated by the artillery that included fourteen-inch naval guns mounted on railcars. These naval guns were a critical element of the barrage's success. The infantry went over the top at 0530 under the umbrella of a rolling barrage quickly taking their objectives. Trained assault teams closed on strong points with direct fire weapons while the remaining infantry troops went

around these positions to continue the advance, breaking through German defenses. The 1st Army advanced twelve miles north in the direction of Sedan overrunning enemy artillery positions on the way. By 4 November 1918, the Germans were in full retreat west of the Meuse River withdrawing to fight a rearguard action and to establish a defensive perimeter on the northeast bank of the Meuse River. The situation was desperate for the Germans whose commander, recognizing the grim situation, stated that his troops “cannot do anything” against the massive attacking formations.<sup>10</sup> On 5 November 1918 III Corps crossed the Meuse River and set up bridgeheads. The end was near for the enemy as by 6 November 1918 the Germans exhausted their reserves. Additional attacks were scheduled but were cancelled upon signing of the Armistice on 11 November 1918.<sup>11</sup> The Meuse-Argonne Offensive and the Great War were over.

#### Forging the 1st Army

Execution of the 1st Army’s plan of attack, though eventually meeting its objectives, was riddled with errors. Fault can be identified in all the combined arms. Infantry soldiers attacked in groups rather than spread out, did not use cover and concealment when attacking enemy positions, failed to use grenades in close combat, and failed to mop up pockets of resistance.<sup>12</sup> Artillery performed badly too, advancing too slowly and firing blindly rather than by direct observation leaving unharmed machine gun nests for the infantry to assault. Likewise, cooperation and coordination between artillery and infantry was non-existent largely because liaison between the various echelons was difficult to maintain due to the broken nature of the terrain and the numerous wooded areas.<sup>13</sup> In general, command and control was impaired by incomplete and contradictory

information reported by frequently malfunctioning radios, telephones wires, and messengers. Colonel R. T. Ward of the AEF Operations Section succinctly summarized the initial assault: "It would seem that our troops are not well organized for an attack. The gaining of the objectives, for the present, does not seem possible without undue losses unless time is taken to reorganize and prepare for concentrated, simultaneous attacks."<sup>14</sup>

Tanks and aircraft were equally ineffective. The terrain just beyond "No Man's Land" was ill-suited for the employment of tanks, particularly the small Renaults provided by the French. Additionally, the infantry lacked experience cooperating with tanks. In its report on Phase I operations the 1st Army stated that an adequate supply of tanks, such as were being used by the French and British at this time, would have materially quickened the advance. It was also believed that additional tanks would have reduced the number of casualties suffered by the infantry soldiers who penetrated the thickets of machine-gun nests.

After a strong start, the impact of army aviation soon diminished. At the opening of the battle the 1st Army's concentration of 821 airplanes controlled the air and rendered valuable service. But as the advance progressed away from established aviation fields into country too rugged for the location of temporary aerodromes, the enemy was falling back on large, well-equipped fields. American aviators found it harder to dominate the enemy's air activities.<sup>15</sup>

Gas used earlier in the offensive may have countered enemy strongpoints that curtailed the forward momentum. Though habitually employed by the Germans, US corps

commanders did not aggressively use gas. In late September the 1st Army gave specific instructions to V Corps to use gas: "Your right divisions apparently held up by hostile artillery located in Bois de Cunel, Bois de Valoup, and along Romage-Cunel Road. Gas should be used to neutralize batteries in these positions while our troops advance." It was not until the final push that commenced 1 November 1918 that corps commanders and below used poison gas against enemy artillery and reserves.<sup>16</sup>

Logisticians also contributed to the tactical quagmire, mostly due to the poor supply infrastructure in the area around the Meuse-Argonne. Only three roads crossed "No Man's Land" and the Germans practically obliterated them through the course of fighting over the previous four years. Artificial obstacles, such as mine craters and contact mines, were freely employed by the enemy. Many service troops were still at St Mihiel and could only be transferred as they could be spared. Heavy rainfall also interfered with the moving of heavy artillery, troops, supplies, and ammunition.<sup>17</sup>

Some of the reasons for failures in execution were beyond General Pershing's control. The first was the sector assigned. The terrain between the Meuse River and Argonne Forest, as previously described, was extremely challenging. Its narrowness limited maneuverability especially since US divisions were twice the size of European divisions, a situation dictated by the extreme shortage of trained staff officers. The square division confined in a narrow area could also inhibit the employment of reserves. Montfaucon was once such battle where reserves could have assisted infantry that engaged strong resistance. Second, time was not on General Pershing's side. General Pershing originally anticipated driving east towards Metz and arrayed his troops

accordingly. Thus the US divisions were oriented easterly towards Metz for the St Mihiel Offensive and to reorient them northward was quite challenging due to the poor road network and compressed time schedule between the St Mihiel and Meuse-Argonne Offensives. Time also dictated which divisions could fight. The troops utilized for the initial Meuse-Argonne Offensive assaults were not experienced and not prepared sufficiently for the task. The best troops available, the 1st, 2nd, 4th, 26th, 42nd Divisions were committed to the St Mihiel Offensive, two weeks before the Meuse-Argonne Offensive.

One of the most costly constraints to battlefield preparation was the decision by President Wilson to abide by the French and British request to give shipping priority to infantry and machine-gun units. This decision, purely political in order to appease the Allies and over General Pershing's strong objection, forestalled training between divisional artillery and infantry. The shipping system separated the artillery from its division and consequently contact with the infantry was lost. According to the AEF G-5 "In several divisions, the division, less the artillery, and the artillery each saw considerable fighting, but were never together prior to the Armistice."<sup>18</sup> In a war dominated by artillery, this was a poor decision.

Of all the elements of warfare needed to mold and prepare a fighting force for battle, the two areas where General Pershing could exert the greatest influence were training and doctrine.

The training agenda mandated by General Pershing was responsible for many of the problems encountered by the AEF. The G-5 section initially envisioned a three-

month training period for newly arrived troops in France. But early in 1918, as the Germans pushed west and the need for US manpower on the frontline became more urgent, the G-5 Section developed a preliminary short four week program with follow on training phases as operations permitted. By the summer of 1918, operations allowed only a few divisions to receive the full four-week course before placed in quiet sectors. The training received typically lasted from as little as six days to three weeks.

General Pershing was adamant improving the rifle skills of his soldiers. The 13 October 1917 edition of the *Army and Navy Journal* expressed his sentiments: "You must remember that the rifle is distinctively an American weapon. I want to see it employed." Therefore his general principles governing training stated "The rifle and the bayonet are the principal weapons of the infantry soldier. He will be trained to a high degree of skill as a marksman both on the target range and field firing." To meet this requirement the infantry course in France consisted of instruction in musketry, automatic rifles, grenades, observation and sniping, one pound cannon, Stokes mortar, minor tactics, and gas. The musketry portion of the course was designed to overcome poor stateside musketry training by starting instruction in the basic and fundamental elements of rifle use. By September 1918 instruction in different specialties was restricted to one-half day and only one-half of each day was devoted to instruction in cooperation between the various infantry arms and drill in open warfare combat formations.<sup>19</sup>

Likewise, artillery and tank brigades were also shortchanged training. A lack of adequate ranges and time made it impractical for artillery brigades to train with their divisions. And when training was conducted, it was technical, not tactical. Frequently



the enemy situation compelled brigades to be assigned to a division other than its own. As previously stated, several divisions (less artillery) and their artillery saw considerable fighting but never together prior to the Armistice. Consequently, infantry was supported in most instances by artillery units with which they had never before trained accordingly "efficient teamwork between the artillery and the infantry was not easily attained."

The scope of tank training also lead to coordination problems. Instructions for conforming to infantry formations was provided through maneuvers with any infantry available and when none were available, maneuvers were conducted with tank corps soldiers acting as infantry. In Colonel George S. Patton's opinion, "It is further believed that much better liaison with infantry could have been obtained had the infantry who were detailed to take part with the tanks in an attack been given a similar state of preparatory maneuvers with tanks."<sup>20</sup>

The foundation for the poorly conceived training was erroneous AEF doctrine. Though Allied marksmanship was poor, it was not the cause for Allied soldiers failing to achieve victory. In fact, the rifle was used very little by US soldiers and in practice was given no more emphasis than that given by the French or British. On the World War I battlefield, the weapons with the crucial firepower were artillery and machine guns. Doctrinal guidance from General Pershing insisted on a uniquely American doctrine that sharply contrasted with Allied doctrine. Colonel Harold B. Fiske, Assistant Chief of Staff, G-5 (Training), clearly summarized AEF philosophy:

Tactics and techniques of our Allies are not suited to American characteristics or the American mission in this war. The French do not like the rifle, do not know how to use it, and their infantry is consequently too entirely dependent upon a powerful artillery for support. Their infantry lacks aggressiveness and discipline.

The British infantry lacks initiative and resource. The junior officers of both allied services, with whom our junior officers are most closely associated, are not professional soldiers, know little of the general characteristics of war, and their experience is certainly limited to the special phases of war in the trenches. Notwithstanding all the efforts made to prevent such, the many French and British instructors scattered among our divisions have spread French or British doctrine, or a combination of both, through our Service.<sup>21</sup>

General Pershing's reliance on the infantryman may well have been a result of his past experience and not just an aversion to French and British doctrine. As an observer in the Russo-Japanese War he concluded that artillery support of the infantry was "of little avail." Additionally, while an observer he did not actually see Japanese machine guns in action.<sup>22</sup>

Meanwhile, back in Washington, the War Department disagreed with formulating uniquely American doctrine. After all, the War Department postulated, unlike the US the French and British armies did have experience in the war. French doctrine relied on artillery to conquer terrain and the infantry to hold it, while the British emphasized tanks and planes. But by August 1918, General Pershing may have realized his error in doctrine admitting "perhaps we are losing too many men by enemy machine guns. I think this might be met by tanks or possibly artillery."<sup>23</sup> Another reason for deferring to French and British doctrine was the fact that without Allied materiel the 1st Army would have been helpless. At the front the 1st Army did not fire a single American manufactured cannon or shell or operate an American-made tank. Only twelve of forty-five aircraft squadrons were fielded with American-made aircraft.<sup>24</sup> Hence, training provided to soldiers did not emphasize fire and maneuver or coordination between the two most significant arms in battle, the infantry and artillery. The same was true for other

supporting arms, notably tanks and aircraft. The AEF clearly failed to adapt to the doctrinal lessons of the war learned by the French and British.

Political influences, not military influences, may have been the motivation for the weight given to doctrine of the rifle. Though utterly unprepared in producing most of the weapons of modern war, the one state of the art weapon the Army had in its inventory was the rifle. And it had lots of them. In addition, the terrain near Metz where the 1st Army originally intended to attack was more wide open than the area between the Meuse River and Argonne Forest. Additionally, a distinct doctrine provided a plausible rationalization against incorporating US soldiers with the French and British divisions and for a separate fighting force under American leaders. President Wilson needed an American army to prove to the allies the importance of collective security and give him greater influence in the peace conference in order to promote his agenda for post-war world order.<sup>25</sup>

For the Meuse-Argonne offensive, AEF headquarters provided detailed instructions to attacking commanders. Therefore, units frequently halted their advance while waiting for units on the flank to catch up, even when objectives could have been taken without waiting. Detailed guidance was necessary, however, to manage and organization as large as the square division (two brigades, two regiments per brigade). Though General Pershing instilled in his soldiers the idea that they should take the initiative, specific orders listing specific boundaries and objectives actually curtails initiative. But to have a force trained to take the initiative requires strong junior leaders.

Unfortunately for the AEF, strong junior leadership was among the many of the things it did not have in abundance.<sup>26</sup> Training, doctrine, and planning were not complimentary.

As the offensive progressed doctrinal deficiencies became apparent to commanders through combat experience. Regretfully, they were identified at the price of blood shed by courageous and inexperienced American soldiers. When the United States entered the war, the AEF did ascertain lessons from the Europeans. The AEF G-5 started a process to disseminate genuinely American lessons publishing *Notes on Recent Operations* since well before the September 1918 and continued throughout the Meuse-Argonne Offensive. *Notes No. 3*, published 12 October 1918, captured information specific to the St Mihiel Offensive and the Meuse-Argonne Offensive through the first phase (*Notes No. 4* which detailed the remainder of the campaign was published after the Armistice). *Notes No. 3* highlighted several aspects of the St Mihiel Offensive that were successful but were not used or ineffectively used during Meuse-Argonne. Smoke screens, Stokes mortars, tanks and wire cutting teams were all effectively utilized. Factors observed as negatively influencing the battle at St Mihiel were the heavy reliance on telephones instead of buzzers in artillery communication, the slowness of artillery to keep pace with advancing infantry, and the difficulties in command and control due to the location of headquarters too far removed from the front lines.<sup>27</sup>

*Notes No. 3* were far more critical of the first phase of the Meuse-Argonne Offensive and tragically, many of the problems displayed at St Mihiel were repeated during the Meuse-Argonne Offensive. Again artillery was too slow to advance and situational awareness was degraded by distanced commanders. Armor was grossly

misused and became a nuisance by congesting roads. Commanders did not task tanks to take out machine gun and instead blocked roads creating huge traffic snarls. Problems with the infantry were also documented. The infantry often failed to inform the artillery when they were halted by resistance therefore the creeping barrages continued to advance while the infantry remained stationary. When the infantry approached machine gun positions they either attacked in frontal assaults at the cost of high casualties or they relied entirely on artillery to take out machine guns. *Notes No. 3* stressed General Pershing's conviction in the rifle insisting that well aimed rifle fire could overwhelm machine guns. *Notes No. 3* criticized the lack of offensive spirit by the infantry, another of General Pershing's tenets. It stated "The infantry sometimes seemed more concerned with the avoidance of loss than with a desire to close with the enemy."<sup>28</sup>

During the third phase of the Meuse-Argonne Offensive the AEF introduced changes in tactical procedures. For example, the 1st Army trained infantry squads as heavily armed and maneuverable "assault teams" whose mission was to eliminate machine gun nests with grenades and explosives. In complimentary action, the bulk of the infantry troops were trained to avoid these strongpoints while under attack by these teams. Additionally, an innovation in the employment of the heavy artillery was introduced. Before the attack commenced, artillery systematically bombarded essential enemy positions as usual. With the revised technique, as the attack started the mass of the army and corps artillery was employed in successive concentration fires that preceded the barrage fire of the divisions of the V and III Corps. The combination of these fires resulted in a danger zone of intense and extremely effective fire 1,000 meters in depth in

the front of the corps.<sup>29</sup> That the AEF could translate new techniques and procedures is encouraging, but the true effectiveness of the lesson learned process is difficult to evaluate due to the short time American troops were engaged and the poor state of enemy forces.

Because of inadequate guidance from the War Department the AEF was forced to formulate its own doctrine. This doctrine, as discussed in Chapter 4 was based on European experience. Despite the reliance on the Europeans, General Pershing insisted on calling the AEF doctrine strictly American. To support the "American doctrine" the AEF devised its own uniquely American training methods that, given the abbreviated time available as a result of the tactical situation, stressed the technical aspects of the infantry and artillery. The problem in the performance of the AEF can be traced to the training provided to US soldiers. The training was not relevant to the European doctrine that the AEF doctrine in reality emulated, that is the reliance upon coordination and cooperation of the combined arms.

If the criteria used to evaluate the effectiveness of learning lessons is the number of casualties sustained, these statistics are inconclusive. At first glance it appears by examining casualty statistics, that the 1st Army's ability to fight did improve over time since over the offensive the number of soldiers killed and wounded decreased. Sharp increases are indicative of the renewed attacks on 4 October 1918 and 1 November 1918. During the first phase of the offensive, the 1st Army gained about twelve miles of ground at a rate of 1,893 casualties per mile. But during Phase II, the attack against the heavily

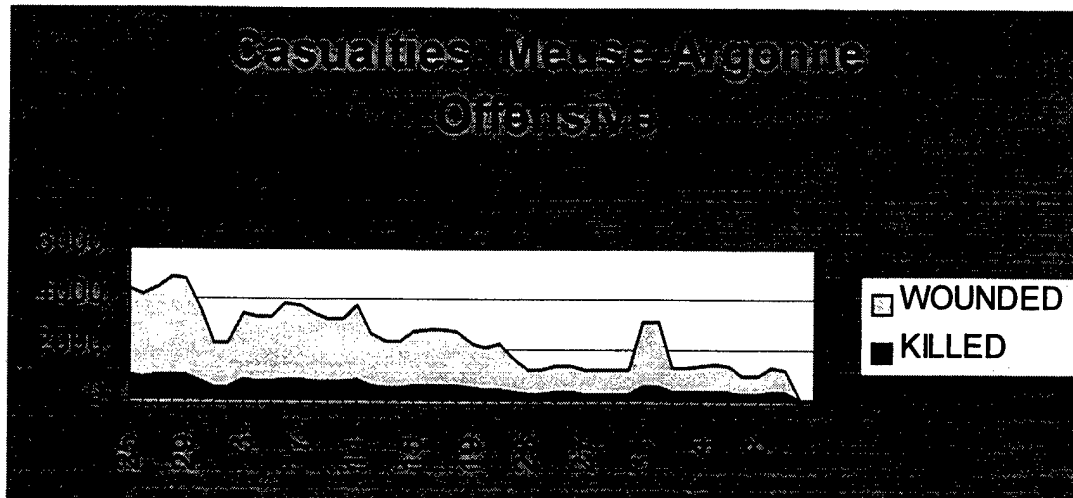


Figure 5. Casualty Statistics, 26 September 1918 to 11 November 1918

defended Kriemhilde Stellung, the Americans were able to advance only about five miles, while the number of casualties per mile gained went up significantly to 15,083 casualties per mile. The last phase was by far the most efficient: 1st Army progressed on average twenty miles at a rate of 699 casualties per mile.<sup>30</sup> Does this mean that the 1st Army dramatically improved their tactical execution? Not necessarily. The improving casualty figures are consistent with the state of German reserves which reflected the German collapse and the overwhelming number of US soldiers in a narrow sector. In Phase III, on the other side of Kriemhilde Stellung was the German rear.

The 1st Army faced a decimated enemy who did not have adequate reserves available in sector. According to the enemy commander, General von Gallwitz, "Troops occupying the front of the Fifth Army were reduced in strength by heavy fighting. Only the tired 117th and 36th Inf. Divs. (were) available as reserves."<sup>31</sup> The Germans stated they needed machine guns to control civil disturbances in their homeland. Marshal Foch

said to get them from their reserves but the Germans admitted that every division they had was on the front line and that they had no reserves.<sup>32</sup> The American divisions, inflated in size in comparison to European divisions, faced a grossly undermanned enemy. Lacking finesse and solid execution the 1st Army was successful by bullying their way against a weakened enemy. The exterior flanks of the German “Argonne” and “Meuse-West” Groups, which had held their positions, were withdrawn because of the deep American penetrations into the “Freya Position,” a position existing in name only. The left flank of the Third Army likewise was withdrawn. In addition, 3 Austro-Hungarian divisions had to be relieved by German troops.<sup>33</sup>

#### The Contribution to Allied Victory

Once the silence of peace replaced the sounds of war on 11 November 1918, the 1st Army could reflect on their accomplishments. One French staff officer praised the American effort saying “let me say from my heart that we French, we will feel an eternal gratitude to Americans, for without your aide we would today be (German) provinces instead of free people. You came not one hour too soon. We were nearly finished.”<sup>34</sup>

Nevertheless, victory did not come about because of some great tactical or doctrinal initiative. It was the result of attrition; Marshal Foch’s stated goal at the beginning of the Meuse-Argonne Offensive.

But the military victory was only part of the reason for the collapse of Germany. The chaos within Germany itself was just as important: “The situation at home is more alarming than that at the front. The new government has not succeeded in gaining full control of the state. Bolshevism has spread into East Hungary: up to now only very



isolated instances of it have sprung up in our country. The Fatherland can be saved only if the army cooperates within itself.<sup>35</sup> The commander of the German Third Army spoke of the lack of total military defeat: "Undefeated and tested again and again in numerous battles you are terminating the war in enemy country."<sup>36</sup>

### Summary

The eleventh hour on the eleventh day in the eleventh month passed and for the first time in four years the cries of the dying and wounded were replaced by silence. The US was in combat for a brief segment of that four-year period and in that time, General Pershing and the AEF had to ready a fighting force for battle. Terrain and time were two factors over which they had little control. The Allied commander assigned the AEF a narrow, craggy, heavily defended sector that even seasoned French forces did not overcome in previous years. Time dictated the greatest challenge. In a brief period the AEF had to be trained to fight to the standards of modern war. Existing French and British doctrine did not capture the true American spirit in the eyes of General Pershing. He inculcated in his force a uniquely American doctrine based on the firepower of the individual soldier and his rifle and bayonet. Subsequently US soldiers were trained in marksmanship. Nevertheless, the Meuse-Argonne Offensive was planned to overwhelm the enemy with artillery, aircraft, tanks, and infantry. Using these arms in combination was the same tactic that the French and British discovered after four years of fighting. Priority given to rifle training lead to a lack of coordination between the combined arms. This was clearly evident in battle. Fortunately, the AEF had a lesson learning process in place and new tactics, techniques, and procedures were introduced to the 1st Army. The

effect of this process is unclear because of the limited time spent in combat.

Undoubtedly, given the abbreviated time to prepare, the AEF would have been better served if it trained to doctrine appropriate to the European battlefield, that is combined arms warfare.

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<sup>1</sup>Shipley Thomas, *The History of the A.E.F.* (New York: George H. Doran Company, 1920), 228; Donald Smythe, *Pershing, General of the Armies* (Bloomington, IN: Indiana University Press, 1986), 202.

<sup>2</sup>*Ibid.*, 202-203.

<sup>3</sup>American Battle Monuments Commission, *American Armies and Battlefields in Europe* (Washington: Government Printing Office, 1938), 176; Donald Smythe, *Pershing, General of the Armies* (Bloomington, IN: Indiana University Press, 1986), 190; Paul F. Braim, *The Test of Battle* (Newark: University of Delaware Press, 1987), 151.

<sup>4</sup>*Ibid.*, 74, 129.

<sup>5</sup>*Ibid.*, 191.

<sup>6</sup>Paul F. Braim, *The Test of Battle* (Newark: University of Delaware Press, 1987), 96-97; Donald Smythe, *Pershing, General of the Armies* (Bloomington, IN: Indiana University Press, 1986), 194.

<sup>7</sup>David M. Kennedy, *Over Here: The First World War and American Society* (Oxford: Oxford University Press, 1980), 197-98; Smythe, 195-197.

<sup>8</sup>*Ibid.*, 197-202.

<sup>9</sup>Smythe, 212-13, 219; Shipley, 323, 325, 334; Allan R. Millet, *The General: Robert L. Bullard and Officership in the United States Army 1881-1925* (Westport CT: Greenwood Press, 1975), 410-11.

<sup>10</sup>Shipley, 187.

<sup>11</sup>Braim, 189.

<sup>12</sup>Historical Division, *U.S. Army, The United States Army in the World War, 1917-1919*, (Washington: Government Printing Office, 1948) Vol. 14, 301-302, 304-05; Smythe, 196.

<sup>13</sup>Smythe, 156-58.

<sup>14</sup>US Department of the Army. Historical Division. *United States Army in the World War, 1917-1919* (Washington: Government Printing Office, 1948) Vol. 9, 149, 187.

<sup>15</sup>*Ibid.*, 186.

<sup>16</sup>*Ibid.*, 154.

<sup>17</sup>*Ibid.*, 177, 187.

<sup>18</sup>Smythe, 301-02.

<sup>19</sup>US Department of the Army, 301-302, 304-05, 348-49.

<sup>20</sup>*Ibid.*, 383-84.

<sup>21</sup>*Ibid.*, 235, 343.

<sup>22</sup>John T. Greenwood, "The US Army Military Observes with the Japanese Army During the Russo-Japanese War (1904-1905)" *Army History* No. 36, Winter 1996, 6-7.

<sup>23</sup>Michael D. Pearlman, *Warmaking and American Democracy* (Lawrence, KS: University Press of Kansas, 1999), 201-203.

<sup>24</sup>American Battle Monuments Commission, 504.

<sup>25</sup>Pearlman, 193-94, 203, 205.

<sup>26</sup>Timothy K. Nenninger, "American Military Effectiveness in the First World War" *On the Effectiveness of Military Institutions: Historical Case Studies from World War I, The Interwar Period, and World War II*, Vol. I, ed. Allan Millet and Williamson Murray (Boston: Allen & Unwin, 1988), 146.

<sup>27</sup>US Army, *Notes on Recent Operations No. 3* (Washington: Government Printing Office, 1918), 19-28.

<sup>28</sup>*Ibid.*, 28-34.

<sup>29</sup>Braim, 367.

<sup>30</sup>American Battle Monuments Commission, 175, 182, 191.

<sup>31</sup>US Department of the Army, 458.

<sup>32</sup>Smythe, 231.

<sup>33</sup>US Department of the Army. Historical Division, 463-71.

<sup>34</sup>Smythe, 234.

<sup>35</sup>U.S. Department of the Army, 462.

<sup>36</sup>Ibid., 475.

## CHAPTER 6

### CONCLUSIONS

Military history is a subject vital to the development of the professional military officer. Military history is the foundation of military theory that is, in turn, largely the basis for military doctrine. The US Army warrior who deploys to the field more than eighty years after his or her predecessor in World War I has not cast this relationship aside. FM 100-5, *Operations*, the Army's keystone warfighting doctrine, states:

Doctrine seeks to meet the challenges facing the Army by providing the guidance to deal with the range of threats to which elements may be exposed. It reflects the strategic context in which Army forces will operate, sets a marker for the incorporation of developing technologies, and optimizes the use of all available resources. It also incorporates the lessons of warfare and the wisdom of the Army's collective leadership in establishing a guide to action in war and operations other than war.<sup>1</sup>

These words are timeless and easily conform to the circumstances of both the early and late 20th century. The time between the initiation of hostilities in August 1914 and the Declaration of War against Germany in April 1917 was a short period of history. Nonetheless, it was an opportunity to learn the lessons of modern war from the nations that already refined their doctrine from thirty-three months of combat experience.

Military officers had a plethora of information available for contemplation. Analysis of the fighting filled the pages of professional military journals through articles by both US and foreign authors. Lessons were provided on traditional elements of warfare like cavalry, artillery and infantry operations. From these journals one could identify the futility of the cavalry in siege warfare, the impact of machine guns on the infantry, the requirement for large caliber artillery, and the need for cooperation between

artillery and infantry. As important were the articles on maturing technologies such as motor transportation and aviation. In field exercises, motor transport proved to be an expeditious and economical way to move refreshed soldiers where needed to influence the battle. Likewise, the role of aircraft in reconnaissance and artillery spotting was lauded.

Additionally, reports submitted by military observers and documents published by all belligerents provided more evidence pointing to the state of modern warfare. Information on the development of the tank and the multi-mission role of aircraft was passed to senior Army leadership at the War College Division. Remarkably, in October of 1914, Major Spencer Cosby, the military attaché in Paris, accurately identified the features of modern war: artillery, aircraft, automobiles, and wireless telegraphy. Nine months later, another officer attached to the French Army, Captain N. E. Margetts, noted the intimate relationship required between the combined arms.

Despite all this data, the War Department did little to modify its doctrine. Neither the *Field Service Regulations*, *Infantry Drill Regulations*, nor *Drill and Service Regulations for Field Artillery* were adequately updated to reflect changes on the battlefield. Lieutenant General Robert L. Bullard succinctly described the prevalent attitude of the Army: "The great war in Europe is hardly affecting us in the army. We read the brief of the morning and afternoon news and dismiss the subject from our minds."<sup>2</sup> In July 1915, at a time when most Americans were not convinced that the United States would ever enter the war, Colonel Edward M. House, confidant of President Wilson, correctly predicted the United States' entry and, reflecting on the state

of the army, pondered "I wonder whether we did not make a mistake in not preparing actively when this war first broke loose."<sup>3</sup> It was with this limited guidance that General Pershing had the challenging ask of fielding an army to battle against an enemy already at war for almost three years. Even when General Pershing asked for direction, the War Department deferred to him because of his proximity to the front.

While organizing and preparing the American Expeditionary Force (AEF) General Pershing did not have complete control of his destiny. The sector he was assigned to attack was extensively fortified and greatly favored the defender. Experienced French forces were unable to conquer enemy positions in the Meuse-Argonne area two years previously. Time was also not in his control. The Meuse-Argonne offensive was part of a larger opportunistic allied operation planned to take advantage of a weakened enemy. As a result, inexperienced and inadequately trained troops went over the top in the initial phase.

Even the formulation of AEF doctrine was not entirely under his control. AEF doctrine differed from existing War Department guidance and French and British doctrine for several reasons. First, a separate doctrine would be a strong reason for not amalgamating US forces with the French and British. A separate US Army that conducted a successful and decisive campaign which the allied leaders believed contributed significantly to victory would strengthen President Wilson's influence in imposing his notion of post war world order. Second, because of political pressure, the majority of the troops first sent over were infantry and machine gunners. General Pershing did not receive cohesive divisions from the United States hence his doctrine

reflected what he had the most of--rifles. Despite these outside influences, the AEF doctrine was indicative of General Pershing's earlier experiences. From his observation of the Russo-Japanese War, he concluded that artillery support for the infantry was of limited value. Additionally, he never witnessed first hand the destructive power of the machine gun.

General Pershing was directly responsible for planning operations and training soldiers. However, planning and training did not reflect doctrine. Detailed planning was required to control the unmanageably large size of the American division necessitated by the lack of junior leadership. Consequently the plan did exactly what General Pershing did not want: it restrained initiative. Irrespective of the doctrine he proclaimed, General Pershing's headquarters planned operations to include the use of combined arms. Unfortunately in the short time available to prepare for battle the AEF spent insufficient time training on the cooperation between the combat arms--the foundation of combined arms warfare. The result: a thoroughly-planned but poorly executed operation.

What is the underlying lesson learned? The lesson is that soldiers, sailors, airmen, and marines must train as they intend to fight, and fight to a doctrine that is applicable to the current threat. This is the challenge for leaders of today and tomorrow; the study of the past will provide that link to the future. "An army that adopts tactical doctrine that it cannot apply will greatly multiply its misfortune."<sup>4</sup>

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<sup>1</sup>Department of the Army, FM 100-5, *Operations* (Washington, DC: Government Printing Office, June 1993), 1-2.

<sup>2</sup>Allan R. Millet, *The General: Robert L. Bullard and Officership in the United States Army 1881-1925*, (Westport, CT: Greenwood Press, 1975), 292.



<sup>3</sup>John Patrick Finnegan, *Against the Specter of a Dragon* (Westport, CT: Greenwood Press, 1974), 39.

<sup>4</sup>Timothy T. Lupfer, *The Dynamics of Doctrine: The Changes in German Tactical Doctrine During the First World War* (Fort Leavenworth, KS: U.S. Army Command and General Staff College, 1981), 56.

# APPENDIX A

## CASUALTY STATISTICS MEUSE-ARGONNE OFFENSIVE

Casualty statistics were extrapolated from the number of personnel wounded, did of wounds, and killed, as listed in each division's summary of operations. The *Summary of Operations* for the 1st, 2nd, 3rd, 7th, 26th, 27th, 28th, 32nd, 33rd, 35th, 36th, 37th, 42nd, 77th, 78th, 79th, 80th, 81st, 82nd, 89th, 90th, 91st, 92nd, and 93rd Divisions were prepared by the American Battle Monuments Commission; the 5<sup>th</sup> Divisions casualty statistics were taken from the *Official History of the Fifth Division* published by The Society of the Fifth Division. All references are available on the second floor, Combined Arms Research Library (CARL), Fort Leavenworth, Kansas. Casualties were reported over periods of days that varied between divisions. For example, a Summary of Operations would list 294 men wounded, 23 died of wounds, and 17 killed between 29 September and 03 October. To obtain the daily figures in the chart the number of wounded was divided over the number of days and died of wounds and killed were added and divided over the number of days. In this example, 58 men were wounded per day and 8 were killed per day.

KILLED										
	26-Sep	27-Sep	28-Sep	29-Sep	30-Sep		26-Sep	27-Sep	28-Sep	29-Sep
1st					31					
2nd										
3rd										
4th	1	0	0	0	34					
5th	83	82	82	82	82					
26th										
28th	95	95	95	95	95					
29th										
32nd	10	10	10	10	9					
33rd	65	13	13	13	13					
35th	189	189	188	188	188					
37th	110	110	110	110	109					
42nd										
77th	48	48	48	48	48					
78th										
79th	162	162	162	162	161					
80th	56	56	56	56	5					
82nd					1					
89th										
90th										
91st	89	89	89	89	89					
92nd	6	6	6	6	5					
93rd	42	42	69	68	68					
	956	902	928	979	958					
					4773	SEPTEMBER TOTAL				

WOUNDED										
	26-Sep	27-Sep	28-Sep	29-Sep	30-Sep		26-Sep	27-Sep	28-Sep	29-Sep
1st					277					
2nd										
3rd										
4th	8	8	8	8	88					
5th	269	269	269	269	268					
26th										
28th	274	274	274	274	273					
29th										
32nd	50	49	49	49	49					
33rd	244	88	88	88	88					
35th	813	813	813	813	812					
37th	505	505	505	505	505					
42nd										
77th	158	158	158	158	158					
78th										
79th	557	557	556	556	556					
80th	142	142	142	141	29					
82nd					12					
89th										
90th										
91st	306	306	306	306	306					
92nd	22	22	21	21	21					
93rd	91	90	389	388	388					
	3439	3281	3579	3865	3830					
					17994	SEPTEMBER TOTAL				

# KILLED

	1-Oct	2-Oct	3-Oct	4-Oct	5-Oct	6-Oct	7-Oct	8-Oct	9-Oct	10-Oct	11-Oct	12-Oct	13-Oct	14-Oct	15-Oct	16-Oct	17-Oct	18-Oct	19-Oct	20-Oct	21-Oct
1st	51	50	50	182	182	182	182	181	181	181	181	181	181	3	3	3	2	2	2	2	2
2nd	33	33	33	98	98	98	98	98	98	98	98	98	98	49	49	49	49	49	49	49	49
3rd	82	82	82	97	97	97	97	97	28	28	28	27	27	27	27	27	27	27	27	27	27
4th												65	65	65	65	65	65	65	65	65	65
5th												2	2	1	41	41	41	41	41	41	41
26th												42	42	53	53	53	53	53	53	53	53
28th												42	42	53	53	53	53	53	53	53	53
29th												42	42	53	53	53	53	53	53	53	53
32nd												93	93	93	93	93	93	93	93	93	93
33rd												21	21	21	21	21	21	21	21	21	21
35th												6	6	6	6	6	6	6	6	6	6
37th												8	8	8	8	8	8	8	8	8	8
42nd																					
77th																					
78th																					
79th																					
80th																					
82nd																					
89th																					
90th																					
91st																					
92nd																					
93rd																					

# WOUNDED

	1-Oct	2-Oct	3-Oct	4-Oct	5-Oct	6-Oct	7-Oct	8-Oct	9-Oct	10-Oct	11-Oct	12-Oct	13-Oct	14-Oct	15-Oct	16-Oct	17-Oct	18-Oct	19-Oct	20-Oct	21-Oct
1st	276	276	276	556	555	555	555	555	555	555	555	555	555	8	8	8	8	8	8	8	8
2nd	88	87	87	392	392	392	391	391	391	391	391	391	391	130	130	130	130	130	130	130	130
3rd	268	268	268	261	261	261	261	260	109	108	108	108	108	108	108	108	108	108	108	108	108
4th																					
5th																					
26th																					
28th																					
29th																					
32nd																					
33rd																					
35th																					
37th																					
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82nd																					
89th																					
90th																					
91st																					
92nd																					
93rd																					

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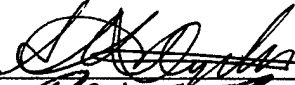


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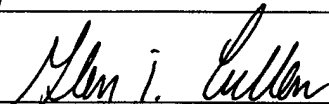
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